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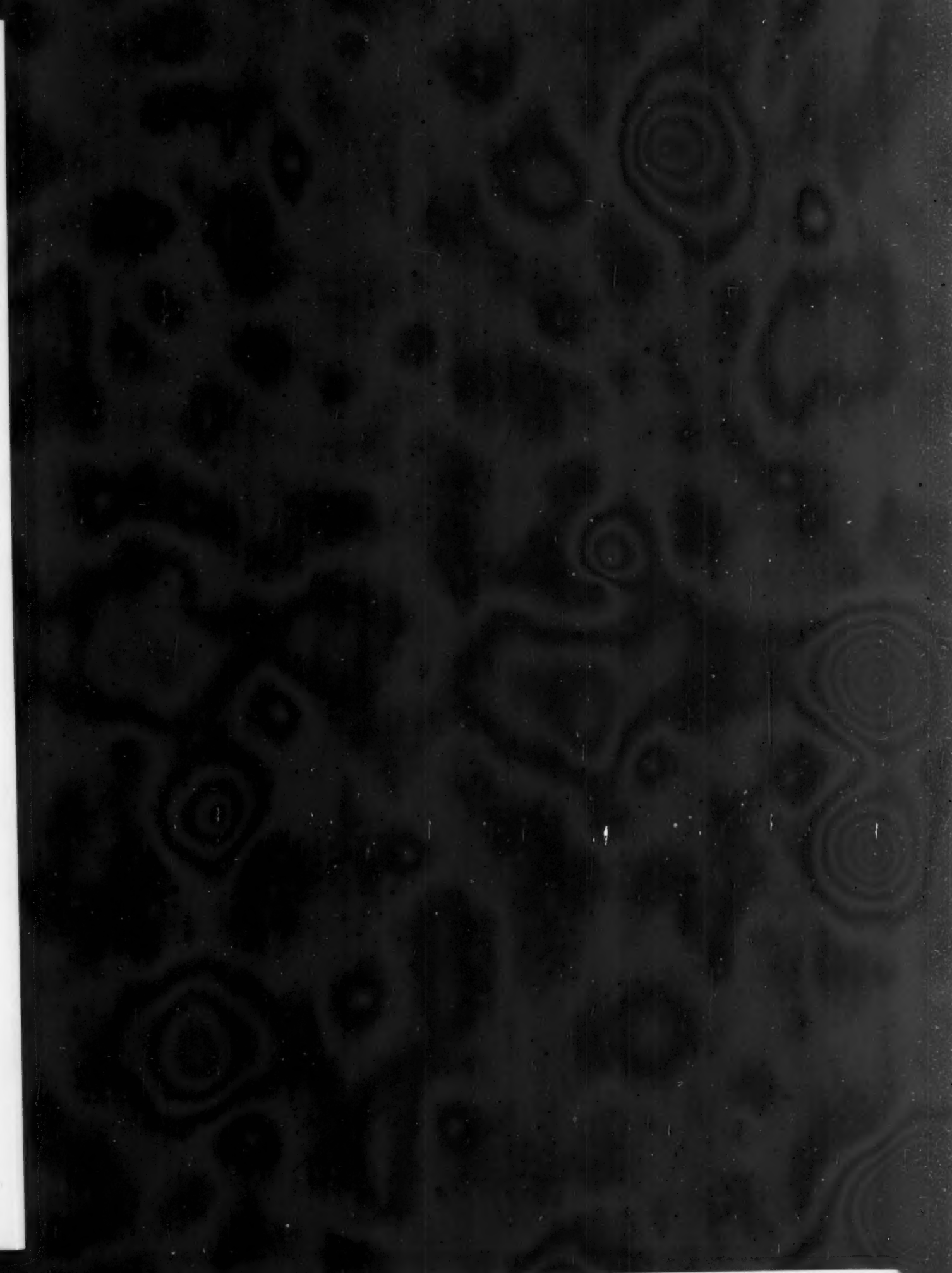

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HAROLD S. BUTTENHEIM, Editor
THEODORE R. KENDALL
Secretary and Engineering Editor
M. V. FULLER, Associate Editor
ALDEN W. WELCH, Research Editor
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TOM DIX, Vice-President
648 Hanna Building, Cleveland
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In

TWIN FALLS IDAHO

SHOSHONE FALLS

Although the Idaho potato has gained national fame, the story of the opening and development of the Twin Falls tract appears almost like a myth to those unfamiliar with the actual latent possibilities of the fertile farm lands. In the short space of some thirty years a barren sagebrush desert has been conquered agriculturally and cities and towns, modern in every aspect, have been built.

The City of Twin Falls, Idaho, serves a trading area of 600,000 acres. The fact that more than 10,000 carloads of agricultural products are shipped from this district annually is proof of the productiveness of this fertile rich farm land.

A tribute to Pittsburgh Water Meters and the success of their 100% metered water supply is expressed by this statement from Mayor Johnston, "I have checked the use of meters with our various departments, such as Finance, Distribution, Filtration and Sewage, and the various heads of these departments all concur that it would be next to impossible to operate our Water System without the use of water meters."

PITTSBURGH EQUITABLE METER CO.

MERCO NORDSTROM VALVE CO.

MAIN OFFICES PITTSBURGH, PA.

NEW YORK	LOS ANGELES	TULSA	HOUSTON	MEMPHIS	BUFFALO
COLUMBIA	KANSAS CITY	CHICAGO	PHILADELPHIA	ATLANTA	OAKLAND

PITTSBURGH WATER METERS

Why not remember to mention THE AMERICAN CITY?

Federal Aid for Public Works and Utilities

$877,500,000 *More for WPA Urged by U. S. Conference of Mayors*

IN a report to President Roosevelt based on a survey of 100 cities, the United States Conference of Mayors, on January 2, urged an additional appropriation by Congress of $877,500,000 to carry on the activities of the Works Progress Administration up to June 30, 1937, the end of the present fiscal year.

Notwithstanding the industrial upturn and substantial business recovery, throughout the United States, the Mayor's Conference report estimates that on December 31 there were 500,000 employable persons on relief for whom no provision had yet been made in any Federal program. As 2,200,000 persons were then employed by WPA, apart from those taken care of by other Federal agencies such as PWA, CCC and the Resettlement Administration, the report concludes that there are 2,700,000 "bona-fide employable relief persons requiring aid." It emphasizes, moreover, that this is the minimum load facing the country during the next few months.

The request for an appropriation of $877,500,000 is based on a Federal cost to average $65 per month per worker.

The report affirms the belief of the U. S. Conference of Mayors that the states and localities should care for unemployable persons who are in need, but that work financed by the Federal Government should be provided for all needy employable persons. It is stated also that the WPA projects which can be continued or begun during the next six months represent "useful and needed work of great public benefit to the people of the nation."

Work, Not Dole, the American Way

Stressing its conviction that "work and not the dole is the American way of providing for the unemployed," the Mayor's Conference report points out that "by adopting this national policy not only have we maintained human life, but we have received from our large expenditures something of value and benefit to every community in the nation." The report also states that:

"We desire to reiterate that we are definitely opposed to any demands being made upon the National Government for additional Federal appropriations for direct relief. The problem of providing adequate aid to the so-called 'unemployable' relief group is a responsibility which we believe rests solely with the localities and the states—and while the 'unemployable' load is a heavy one, it is up to our states and localities to provide the finances required to meet this need.

"In our judgment no better or sounder formula than Federal responsibility for the destitute, able-bodied workers on the one hand and city and state responsibility for the unemployable group on the other, has yet been advanced. We have little faith with those who expect the National Government to do it all.

"In assuming this burden of direct relief, may we point out that cities are in addition contributing 18 per cent of the total cost of the present WPA program as well as paying out of local resources 55 per cent of the cost of all municipal PWA projects approved by the Government. At the present time there are approximately 1½ million cases on the direct relief rolls of the states and localities."

Signed communications from the mayors of 100 cities reinforce the assertion of the Mayors' Conference that the country is still faced with a major problem in caring for the needy unemployed persons. This problem, the report emphasizes, "is no longer of an 'emergency' character, but requires continuing national action." It concludes that "Federal responsibility for those who are involuntarily unemployed and destitute is both proper and required by present conditions," and "that in meeting this responsibility works and jobs and not soup kitchens and breadlines is the American method." It reports that the present WPA has done and is doing useful and necessary work and expresses the readiness of localities, in cooperation with the states, to care for the unemployable group of destitute persons.

An earlier action of the U. S. Conference of Mayors, outlining under ten headings, "What the Cities Want from Washington," is summarized on page 69 of this issue.

52 *PWA Lawsuits to Be Tried Soon*

THE legal staff of the Public Works Administration has been directed by Administrator Ickes to bring to trial on their merits, as quickly as possible, lawsuits involving 52 projects, with allotments totaling $52,270,390, now held up by litigation. These lawsuits had been instigated by private utility interests for the purpose of blocking PWA allotments to communities desiring publicly-owned power plants, distribution systems, or water works. All these allotments were made pursuant to the Acts of Congress providing for emergency construction in order to reduce unemployment, but impending litigation and injunctions have so far prevented these allotments from fulfilling that purpose.

Administrator Ickes' action resulted from the United States Supreme Court's technical decision last month referring the case of *Duke Power Co. v. Greenwood County, S. C.* back to the District Court for re-trial without the Supreme Court's ruling on the merits of the case.

Over one-half hundred cases embracing issues similar to those in the *Duke Power Co./Greenwood County* case are in lower courts. It had been hoped that a decision on the merits of the *Duke Power Co./Greenwood County* case would settle the issues so that considerable time and expense would be saved in determining the other cases. The Supreme Court rule, however, did not decide these issues.

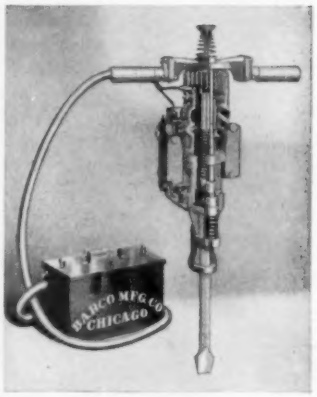
PWA attorneys are conferring with Department of Justice representatives so that the pending litigation may be pushed to a conclusion as rapidly as possible.

The first of these cases, that of the Community Public Service Co., Dallas Power & Light Co., Gulf States Utilities Co., Houston Lighting and Power Co., Texas Electric Service Co., Texas Power & Light Co., and Texas Utilities Co., attempting to restrain PWA officials from lending money to the Lower Colorado River Authority, is set for trial on January 4 in the District Court of the District of Columbia.

Notice has been given to the Carolina Power & Light Co., South Carolina Power Co., and Broad River Power Co. that the Government will expect on February 1 to try the case in South Carolina restraining the Government from helping the South Carolina Public Service Authority.

Notice has also been given to the Nebraska power companies (Iowa-Nebraska Light & Power Co., Western Public Service Co., Central Power Co., Nebraska Power Co., and Northwestern Public Service Co.) that the Federal Government is asking that the trial of these cases be set for February 23 in the District Court of the District of Columbia.

At the same time, the Government will pursue vigorously the defense of its cases which it won in the District Court of the District of Columbia last spring: *Alabama Power Co. v. Harold L. Ickes, et al.*, Equity No. 59071; *Alabama Power Co. v. Harold L. Ickes, et al.*, Equity No. 59671; *Iowa City Light & Power Co. v. Harold L. Ickes, et al.*, Equity No. 60245. Briefs in these cases must be filed by the power companies by January 4, and it is expected that the trial will be held by the first of February.



Versatility

ONE BARCO HAMMER CUT DOWN THIS WHOLE WALL OF LIMESTONE SHALE

The upper portions were cut away by supporting a man and the hammer on ropes slung from the bank above. In the foreground, the stone that has been cut away is evidence of what this useful tool can do. Drilling—digging—driving—cutting—tamping—all in a day's work. A complete unit in itself.

BARCO MANUFACTURING COMPANY
1803 Winnemac Avenue, Chicago, Illinois

BARCO *Portable* GASOLINE HAMMER

Our Municipal Notebook

810 *Counties Report Business Machines*

WHETHER a county is adequately equipped with business machines depends on so many factors that here it need merely be said that 810 counties have reported to THE AMERICAN CITY that they are users of the following equipment:

64 cash registers
160 accounting machines
642 calculators
641 duplicating machines
3,562 adding machines
174 other business machines

Among these counties, Milwaukee leads in number of machines, with 48 accounting, 14 calculating, 8 dictating, 14 cash registers, and 100 adding machines. They are found in 25 departments, with accounting machines in seven of them: the treasurer has 23; tax commissioner, 8; assessor of income, 4; county court, 3; auditor, 6; sheriff, 2; and register of deeds, 2. Dictating machines are used by the district attorney, treasurer, sheriff, coroner, and the probate court. There are 184 typewriters.

Obsolete Equipment Should Be Replaced

IT has often been pointed out that red paint and a siren do not assure an efficient fire engine. The factor of obsolescence is very real in fire apparatus, much of which now in service antedates the tremendous advances made in truck design since the war. The truck, which is the foundation of the apparatus, has been completely re-designed during the last five to eight years. It is during this recent period that the modern truck, with four-wheel brakes, easier steering gear, more dependable wheels, pneumatic tires, modern type engine, has been put into fire apparatus. Other improvements will follow. Modern trucks provide greater visibility for the driver; a shorter wheelbase increases ability to maneuver; both of these add to the safety of the apparatus and of people along its route.

Many ladder trucks now in use are of the old horse-drawn type equipped with tractors. These ladders cannot be raised or lowered mechanically. Few ladder trucks in service carry multiple extension ladders, common in Europe and available in this country. It is suggested that a modified type with longer ladders power-operated or raised could be adapted to all ladder service in residential areas. The advantage of modern ladder trucks is not only in greater speed and convenience, but in a great deal less work to operate them.

Much more consideration should be given to the fire-alarm system. If this is not adequate, a thread of gambling runs through the operation of the entire department. The question was recently asked: "How many times have you picked up a telephone and experienced difficulty in getting the operator?" The closed circuit of the fire-alarm system takes away the element of chance, and makes certain that the fire department will be immediately and accurately notified and, incidentally, will pass the correct information along to the police department. For the alarm is for the attention of the police department as well as of the fire department—and it is well to remember that it is in times of emergency that these expensive departments sell themselves to the public.

Better Transit Attainable

"CITIES with good transit systems are usually good cities," says John A. Beeler, the engineer who reported on the operations of the Seattle transportation system. "Nothing perks up a city so much," continues Mr. Beeler, "as good transit service. This is a fact that really is not recognized by the cities themselves." Indeed, many cities appear not to be conscious that better service is to be had. Left to themselves, not much is to be expected from transit companies carrying a debt burden of 3½ to 10 dollars per dollar's worth of business done. Of, say, 250 transit companies, half of them are in trouble. The first step for the cities is to recognize this problem, and the next is earnestly to endeavor to reach a genuine basis of cooperation with the company. When trouble is understood, it can usually be removed.

Traffic Signals Cost 27 Cents Per Capita

NEWSPAPERS in a large city said on December 23, "It is the Mayor's custom to veto all resolutions coming from the board which request traffic lights and warning signals in various parts of the city, on the ground that there is no money available to put lights on every intersection."

The modern tendency of course is to do just that — properly signalize every dangerous intersection. The cost to do this is less than many expect. One hundred forty-seven representative towns with combined population of 5½ millions have 1½ million dollars invested in their traffic signals. This amounts to 27 cents per capita. The average cost of all maintenance exclusive of electricity is 8 per cent, and amounts to a little over 2 cents. The cost of the electric current may be as high as 10 cents per capita or as low as "practically nothing" as in those cities operating municipal plants.

Policing a busy or fairly busy intersection is not only hard and dreary work but hazardous work as well. Consequently it is interesting to note that signalization of the 2,285 intersections in these 147 cities released 451 policemen for other needed duties. At an average of $2,000 per year per man, this amounts to $902,000. Many of these men are of course still on the payroll, but the work they did at street corners is still being done plus the new job they are now doing by the grace of traffic signals. In all these 147 cities, there are only 561 intersections needing signalization.

Lapses and Accidents

A MAN well known in municipal traffic work remarked recently that most people have moments of aberration—and that is when many traffic accidents happen. A little doze or day dream, a start and a crash. What can cure this condition? This man says that drivers tend to lose acute consciousness of traffic lights in a familiar neighborhood. One way to make local drivers conscious of traffic lights is to change the timing. They become accustomed to making ten blocks on the green. The timing is changed from 2 minutes to 1½ minutes, as in New York City, for instance, and the drivers find themselves making only seven or eight blocks and begin to take close notice of the lights. How long will this new alertness last? Is changing the time good practice, except on rare occasions? It is said that in New York accidents have decreased since the shorter time was set. This is interesting, because most accidents at intersections occur when the light changes, and now it changes 40 times an hour in place of 30 times. The reason ascribed for this improvement is that the pedestrian, having a better break, a maximum wait of only 1½ minutes instead of 2 minutes, is more inclined to wait for the green on the cross street. The traffic problem has many equations in its solution.

Parking Meters

THE City Council of Norfolk, Va., on December 15 adopted an ordinance regulating traffic and providing for the installation, operation, maintenance, supervision and control of the use of parking meters for a period of 90 days.

The MORSE *ALL-STEEL* FILTER PLANT

✓ *Modern*
✓ *Flexible*
✓ *Economical*
✓ *Dependable*
✓ *Efficient*

5 *points* worth checking for LOWER COSTS:

MUNICIPALITIES faced with the problem of modernizing . . . enlarging . . . or erecting new water filtration facilities are invited to give careful consideration to the cost-reducing possibilities offered by Morse *All-Steel* Filter Plant units.

In design, this plant is made completely modern to give you a minimum rate of depreciation and maximum useful life. It utilizes the principles of steel construction which have proved so successful in large-capacity elevated storage tanks and steel reservoirs.

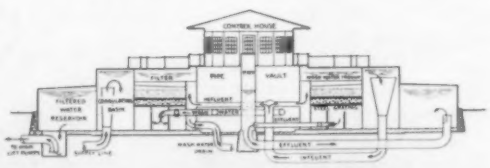
In first cost the Morse Filter Plant runs 30 to 40% lower with all things equal. Also, because it is highly flexible both in operation and in application, water works engineers are often able to plan for smaller capacities—secure in the knowledge that additional units can be added economically when needed.

And when it comes to operating costs here again the Morse Filter Plant offers definite advantages. All parts are planned to reduce the labor for maintenance and cleaning to a new minimum. Loss of head through the plant is smaller, thus making for lower pumping costs.

Let us show you what these advantages can mean in dollars and cents to your water department. No obligation.

At Burnt Mills, Md.

Pictured above is one of the Washington Suburban Sanitary District's *Morse Filter Plant* units at Burnt Mills, Md. Although only 100 ft. in diameter, this self-contained plant has a 5-m.g.d. capacity. Other designs are available for units ranging from 250,000 g.p.d. to 30,000,000 g.p.d. Below is a cross-section diagram of a typical unit.



CHICAGO BRIDGE & IRON COMPANY

Chicago . . . . . 2127 Old Colony Bldg.
New York . . . . . 3308-165 Broadway Bldg.
Cleveland . . . . . 2236 Rockefeller Bldg.
Detroit . . . . . 1501 Lafayette Bldg.
Philadelphia . . 1616 "1700" Walnut St. Bldg.
Boston . . . . . 1501 Consolidated Gas Bldg.
Birmingham . . . . . 1502 N. Fiftieth Street
Dallas . . . . . 1406 Dallas Athletic Club Bldg.
San Francisco . . . . . 1033 Rialto Bldg.
Houston . . . . . 2919 Main Street
Tulsa . . . . . 1625 Thompson Bldg.
Los Angeles . . . . . 1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Water Supply—Rates—Fire Protection

Choosing Material for Water Services

IN choosing the material to be used for a water-service connection which includes both the pipe and the meter, quality and past performance, rather than unit cost, should be the guide, states Frank M. Murphy, of the El Paso, Texas, Water Department, in a paper on this subject presented before the Southwestern Section of the American Water Works Association. Many times, material is bought with the only thought that it is cheap, enabling some purchasing agent to point to the savings he made by accepting the lowest bid, when in reality the material in question will give only half the service of one a few cents, or dollars, higher. This is particularly true in brass goods and meters—two of the essential parts of a service.

Don't be fooled into thinking that the meters, or brass goods, that you can buy at half the price are equal to the standard makes, the only comparison being that they look something alike from the outside. This apparent saving is one of the hardest obstacles you have to overcome. In the brass goods, or pipe, your loss, when it comes, means only replacement and labor, but in the meter you sap the very life-blood of the department as well. One of the points that should not be overlooked is that the bonds that pay for water-works improvements mature in forty years. Do not plan to renew a service several times before the original bill is paid.

Standardization in the use of water-works material is the ideal, but just try to adopt a standard that will please anyone except the manufacturer and dealer in the favored article. The purchasing agents claim it cramps their buying power; the material man whose product is not specified puts the fire under you through his local agent who, he makes sure, is an influential taxpayer. If a department is fortunate enough to be free from political domination in choosing material, the superintendent may weather the storm. Otherwise, he will find himself using a substitute for what he knows to be better practice.

Lower Water Rates for East Bay Cities

THE nine cities of the east shore of San Francisco Bay, including Oakland, Berkeley, Alameda, Piedmont, Richmond, San Leandro, Albany, El Cerrito and Emeryville as well as a large area of adjacent unincorporated territory with a total population of 500,000, had their water rates reduced 10 per cent by the East Bay Municipal Utility District for all users drawing less than 33,300 cubic feet per month. This saving, totaling $360,000 a year, will affect over 90 per cent of the consumers.

The new rates are:

First	3,300 cu. ft. per mo...	$0.23 per 100 cu. ft.
Next	30,000 " " " " ...	0.21 " " " "
Next	300,000 " " " " ...	0.19 " " " "
Over	333,300 " " " " ...	0.16 " " " "

There is a monthly stand-by charge for domestic, commercial and industrial services as follows:

⅝"	meter.....	$0.50
¾"	"	1.10
1"	"	1.65
1½"	"	2.75
2"	"	4.95
3"	"	8.80
4"	"	13.75
6"	"	27.50
8"	"	44.00
10"	"	62.70
12"	"	84.70

The new rates reduce the meter rentals on ⅝-inch meters 5 cents per month, leaving charges for the other meters the same as on the 1931 schedule.

Cold Weather and Floods Hard on Service Lines

BEDFORD, PA., experienced a great deal of trouble last spring with service lines breaking, some which were being used and some abandoned lines. The abandoned lines of course gave the most trouble. In one case, for instance, it was necessary to dig at least ten holes before the leak was located.

The city was badly flooded on March 17, 1936, which may have caused some of the trouble, but it is believed that most of the difficulty was due to the exceptionally cold weather and to the fact that it was necessary to switch reservoirs on several occasions to permit repairs and the old service lines could not stand the resulting additional pressure.

LOCATION OF A SERVICE LEAK THAT KEEN EYES CAUGHT AND STOPPED

The leak shown in the illustration, on East Penn Street, is typical of the breaks which occurred in old service lines. The stream was about ¼-gallon per minute and was strong enough to keep some small grains of sand in suspension over an area 2 inches in diameter. The break occurred adjacent to a cast iron culvert, and the water immediately ran into the culvert and down hill. The leak was spotted and repaired at once by the maintenance crew.

CHARLES C. LEE,
Borough Engineer.

Providing Better Fire Protection in the Smaller Communities

IT should be noted that the title of this item refers to "better protection" and not to "ideal protection." In speaking before the Indiana Section, American Water Works Association, Clarence Goldsmith, Assistant Chief Engineer, and George Tatnall, Engineer, The National Board of Fire Underwriters, Chicago, Ill., summarized their paper on better fire protection by emphasizing that the Underwriters do not specify additions and changes which would bring smaller communities *to* the ideal, but only *towards* it as much as can reasonably be expected.

"Such improvements consist, first, of making very sure that the entire existing system is functioning as perfectly as possible. Then increase storage to meet fire demands; such storage to be elevated, preferably, but, if this be impossible, to be at least provided as suction storage supply for a fire pump. Every effort should be made to provide more than one pump, even in the smallest communities, and to provide some duplicate source of power. Be sure that the distribution system is sufficient to take care of the supply provided, and take care of reliability by suitable valving and looping of feeder mains. Then set up an annual program, and stick to it, for the gradual elimination of the more minor individual weaknesses, such as dead ends, 4-inch pipe in important sections, wide valve spacings, wide gaps between hydrants, and hydrants of obsolete, inadequate or unreliable type, and, above all, take immediate steps to assure that the value of these improvements is not rapidly dissipated through lack of proper maintenance.

"Give your co-worker, the fire chief, all the support you can when he asks for improvements, so that his facilities may keep reasonable pace with the development of your own. Any of these proposals will be a step towards the goal, and when most of them are carried out you may feel well on your way towards that goal of better and more effective fire protection."

"Save the Structure" may well be the slogan of bridge engineers who, in 1937, are faced with the necessity of doing something about rapidly increasing live loads, great increases in traffic, and deteriorated roadway surfaces.

There is a direct solution in the use of Alcoa Aluminum to replace needlessly heavy floors and floor systems, railings and walk-ways.

Dead-load reduction with Alcoa Aluminum can add years of useful and safe service to thousands of existing bridge structures. Here are four things that may be accomplished: 1. Traffic capacity increased; 2. Permissible live load increased; 3. Roadway surface improved; 4. Stresses reduced.

Saving the structure with Alcoa Aluminum is good engineering, as several successful reconstruction jobs have proved. And it is good economics to avoid expensive new construction by a relatively small investment in sound improvement.

May we discuss the engineering considerations with you? ALUMINUM COMPANY OF AMERICA, 2172 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA ALUMINUM

Street Litter — Incineration — Snow Removal

OPENING A ROAD BLOCKED WITH 8- TO 10-FOOT SNOWDRIFTS IN THOMPSON, N. Y., USING A 157-HP LYNN TRACTOR SNOW-PLOW

How May We Be Rid of Street Litter?

ANSWERING this question in an address on the litter problem, Norman G. Wilson, Inspector of Lighting and Cleansing of the city of Edinburgh, Scotland, said, "My own experience convinces me that improved social conditions will bring about a different outlook on life and one more susceptible to the appeal of the reformer. The facilities afforded by modern advertising have not, I am convinced, been sufficiently exploited. The advantages of clean and tidy streets should not be casually submitted to the public, but, rather, a mass assault should be made on the public mind by means of the cinema, the radio and the press, as well as by lectures and addresses. Only by reiteration on a large scale can better habits be formed.

"Apart from the educational side, steps must also be taken to provide facilities in the highways for the reception of litter. Our methods for its removal must be carefully planned, the appliances must be designed with care and foresight, and, above all, our regulations must be so framed that the litter lout is brought to book for neglect of those rules established for the benefit of the community. From all accounts and from my own limited experience of travel on the Continent, the method of summary fines for casting litter on the street appears to be exceedingly effective. As our democratic views are not consistent with such methods, however, it is unlikely that the police force will be vested with powers to enforce immediate fines. Many cities are now working under their own orders and by-laws to deal with the nuisance."

Rescues at the Incinerator

MANY interesting experiences have arisen from time to time because of the carelessness of housekeepers in Mount Vernon, N. Y., who dispose of small valuable household articles, including even jewels and money, via the rubbish and garbage cans. We have in our files reports of instances where cigar and cigarette boxes, used as savings banks and containing large sums of money, were thrown into the garbage can. If the office of the Commissioner of Public Works is notified within an hour or two after the truck has left the premises, it is usually possible to retrieve the lost article. One case on record was of a woman who had been saving for her taxes. She used an empty cigarette can as a bank and it was unwittingly thrown out by the maid. Immediately notified of the loss, the incinerator foreman was instructed to carefully rake through the rubbish brought in by the truck which operated in that street. After considerable raking, the Department was happy to return the lost cigarette can containing some $200 to its owner.

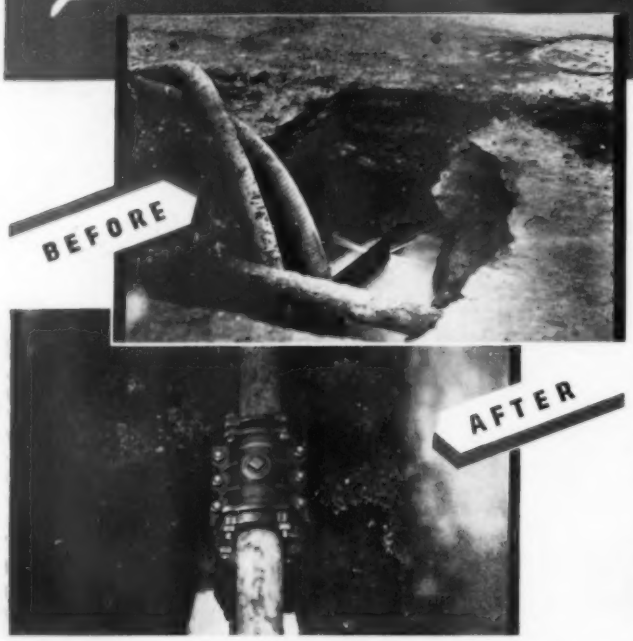
RICHARD E. STINSON,
Commissioner of Public Works.

Hand and Machine Cleaning

PASADENA, CALIF., puts considerable emphasis on clean streets, and during the period of depression the city did not lower its standard of street cleaning. According to the Annual Report of the City Manager for the fiscal year ending June 30, 1936, the city owns three motor sweepers. These covered a total of 39,338 curb-miles of streets at a cost of 45 cents per curb-mile, which is 0.5 cent per curb-mile cheaper than for the previous fiscal year. Six hand sweepers cleaned 6,481 curb-miles of streets at a cost of $1.09 per curb-mile, this being the same as the cost for the previous year. The pick-up work cost 15.4 cents per curb-mile for machine sweepings, and 14.9 cents per curb-mile for hand sweepings.

PERCY RUTLEDGE, A LOGGING CONTRACTOR, HELPED DIG THE CITY OF CASCADE, IDAHO, OUT FROM UNDER A 5-FOOT SNOWSTORM LAST WINTER, USING A LeTOURNEAU ANGLEDOZER MOUNTED ON A CATERPILLAR DIESEL TRACTOR

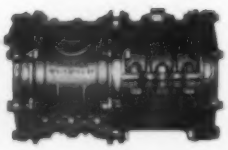
WHEN PIPE-BREAKS OCCUR . . .
HERE'S HOW TO RESTORE SERVICE
Quickly—Easily—Permanently!



NOBODY enjoys a *service interruption*—least of all the waterworks superintendent. That's why the Dresser method of repair makes such a big hit with every waterworks department that has tried it. Difficult repair jobs are made EASY! Service is restored in a few minutes' time—instead of hours!

When there's a *break*, *split*, or *hole* in the straight run of the pipe, simply do this: (a) Place the bottom half of a Dresser Sleeve beneath; (b) the top half above; (c) insert the bolts; (d) tighten with a wrench; (e) screw in the vent plug. *The repair is permanent.*

This method is nearly 50 years old in practice. The Dresser Split Sleeve is a completely *engineered* product—double-tested before shipment at the factory. Thousands have been installed by waterworks departments everywhere. *Send for folder No. 57, and ask for prices on specific pipe sizes in your system.*



ABOVE—Dresser Style 57 Split Sleeve used for repairing breaks in the straight run of the pipe.

LEFT—Style 57 Sleeves can be joined in multiple installations of two or more, to cover breaks longer than 8".

LEFT—Another style of sleeve—Style 26—encloses split or broken bells.

RIGHT—Cutaway view of a Style 57 Split Sleeve, showing working principle. Once sealed with a Dresser Split Sleeve, the break is sealed permanently.

Get these High-Points about Dresser Split Sleeves:

1. You don't have to shut down the line completely—often not at all.
2. You don't have to drain the line and dry the ditch.
3. You can make a permanent repair, often in less time than it takes to get ready the old way.
4. Your own men can easily install . . . a wrench is the only tool needed.
5. High-tensile-strength materials mean less weight to handle—easier to place in any weather or ditch conditions.
6. Cast bolts are used throughout.
7. Patented, grooved side-pack holds gasket in position, even when installed under high pressure.
8. A completely engineered, time-tested product—thousands of cases to prove its value.

DRESSER
SPLIT SLEEVES

S. R. DRESSER MFG. COMPANY . . . . BRADFORD, PA.
In Canada: Dresser Mfg. Company, Ltd., 60 Front St., W., Toronto, Ont.

Public Safety

Engineers and Police

TRAFFIC engineers are contributing more than any other group to the training of our traffic police. Not only this, but their influence is having a broad beneficial effect in raising the standards of police organization and performance. . . .

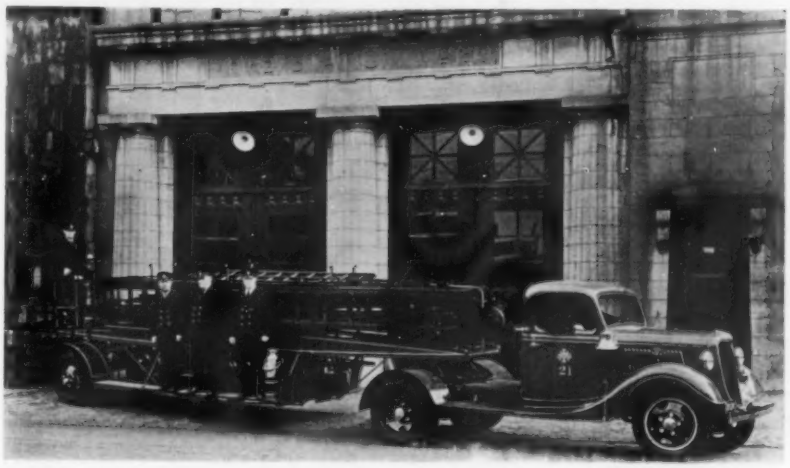
If the police could not make the highways safe, the engineer had to. If the engineer could not do this alone, he and the police had to work out a method whereby, together, it could be done. . . .

The eyes of our police executives have been opened to the necessity of employing men with better than average backgrounds of education and experience. Better training levels have been achieved. The prestige of the police has been enhanced. . . .

Traffic engineers have given the police something to work with. What they have done in the field of traffic safety is of permanent record.

C. F. VAN BLAKENSTEYN,

Secretary, Michigan State Safety Council; at the recent meeting of the Institute of Traffic Engineers at Atlantic City, N. J.



Truck Equipment for Montreal's Fire Apparatus

IN 1935 the Montreal Fire Department adapted 18 Ford V-8 2-ton trucks to 12 city trucks or ladder wagons and 6 hose wagons. These pieces of apparatus have proved so satisfactory that C. Carson, Director of the Department, reports the purchase of four more Ford trucks this year —two for salvage wagons, one for a ladder wagon, and one for a hose wagon. In Montreal's 45 fire stations are:

34 hose wagons (27 Reo, 1 Ford)
31 ladder wagons (13 Ford, 6 White, 5 American-La France, 4 Seagrave, 3 Bickle)
10 aerial ladders (7 Seagrave, 2 Magirus, 1 American-La France)
7 salvage wagons (Reo)
5 delivery trucks (Ford)
2 fuel wagons (Reo)
1 siamese wagon (Reo)
13 chiefs' cars (12 Ford, 1 Packard)

A Dangerous Method of Safety Education

ARE YOU READY TO DIE?
KEEP YOUR EYE ON THE SIGN BOARDS
SAFETY FIRST SIGN CO INC.
ROSES ARE RED VIOLETS ARE BLUE, DRIVE SAFELY, THIS MEANS YOU!
READ THIS SIGN AND PLAY SAFE!
GOT A DATE WITH THE UNDERTAKER?
THEN WHAT'S YOUR HURRY?
SAFETY FIRST SIGN CO. WATCH THIS SPACE!!
Herbert Johnson

Courtesy of National Roadside Council

One-Foot Center Strip for N. Y. City Parkways

I have followed the record carefully from day to day and have received accurate and reliable reports from a number of different agencies. One of the most surprising things about the reports is the amazingly small number of parkway accidents. Another fact is that a large proportion of them are rear-end collisions due entirely to speeding.

It is true that head-on collisions can probably be avoided by a center panel dividing the two streams of traffic, but it has not always been possible in the past to obtain enough right-of-way for this purpose. In the last year and a half, however, we have designed no parkways without a center island or planted strip.

I am also going to try some experiments in two or three different places with a one-foot curb in the center of some of our parkways to see whether this will work.

ROBERT MOSES,

Commissioner, Department of Parks, New York City; from a letter to George U. Harvey, President, Borough of Queens.

New York's New Traffic Rules

NEW YORK CITY'S new traffic rules limit speed to 25 miles except in specific instances where 20 to 40 are permitted; prohibit soliciting by car watchers and venders of parking space; forbid anyone except driver and passengers to ride in a taxicab, and thus outlaw the men and boys who ride on running boards on rainy nights offering to sell the cabs to highest bidders; and prohibit any turns on red lights except where there are policemen or markers.

Mathieson Chemicals do a dependable job at Allentown, Pa.

WATER DEPARTMENT
W. R. SCHNABEL, C. E. Supt. & Engineer

September 26,1936

The Mathieson Alkali Works,Inc.,
60 East 42nd St.,
New York, N. Y.

Gentlemen:

We are pleased to reply to your recent inquiry regarding our use of and satisfaction with your products.

It may interest you to know that we have been users of your liquid chlorine for over twenty years. In this time we have been well served and have not been subjected to any inconvenience from dirty or sticky cylinder valves which we consider a distinct advantage.

We have also been users of HTH since its first introduction several years ago. We have found this product particularly useful in sterilizing our water mains up to 12 inches diameter.

In addition we have used HTH in our public swimming pools for sanitary purposes in foot baths and for cleaning up around the pools and as an emergency source of chlorine in the pools.

In the large,36 inch mains,we have found it economical to sterilize by adding liquid chlrine directly to the water from a cylinder transported to the job in a rig of our own make-up.

We might add in closing that we are small users of your light soda ash and have found this product as uniformly satisfactory in quality and from a service viewpoint as our other purcahses from you.

Yours very truly,
W. R. Schnabel
Supt. & Engineer

WRS:B

FROM the City of Allentown, Pa., comes this further evidence that water works men appreciate quality chemicals and dependable service—and that they select their sources of supply accordingly. Certainly Mr. Schnabel, whose letter is reproduced at the left, has shown his appreciation of these things in a very tangible way by using Mathieson Chlorine for over twenty years. Moreover, when he has needed other chemicals made by Mathieson, he has looked for—and found—the same high quality and prompt service that he had long come to associate with the name Mathieson.

The* MATHIESON ALKALI WORKS *(Inc.)
60 East 42nd Street **New York, N. Y.**

Soda Ash . . . Liquid Chlorine . . . Bicarbonate of Soda . . . HTH and HTH-15 . . . Caustic Soda . . . Bleaching Powder . . . Ammonia, Anhydrous and Aqua . . . PH-Plus (Fused Alkali) . . . Solid Carbon Dioxide

Health and Sanitation

The Typhoid Fever Record of New Haven, Conn.

FOR the last five years, up to October 1, 1936, there have been 34 cases of typhoid fever reported to the New Haven, Conn., Health Department, as follows:

	Cases	Deaths
1932	4	1
1933	8	0
1934	7	0
1935	3	0
1936—9 months	12	2
Total	34	3

Age groupings: Cases	Age	Sex	Deaths—Source
Under 5— 0			
5 to 10— 5			
11 to 20—13	12	Female	Insanitary toilet
21 to 30— 9			
31 to 40— 5	43	Male	Carrier
41 to 50— 1	73	Female	Ingestion of raw clams
Over 50— 1*			

* Age 73.

An analysis of the sources showed that five cases came from proved carriers, six from eating raw clams from polluted water, seven from insanitary premises and privy vaults, five from out-of-town sources, and eleven could not be traced.

According to the *Monthly Bulletin* of the New Haven Department of Health, in 1935 it seemed that New Haven had almost reached the peak of achievement in typhoid fever control, there being only three cases and no deaths, but 1936 has demonstrated this to be an erroneous conception, for New Haven has been faced with twelve cases and two deaths, a greater incidence than in any other of the five years. However, five of these cases were infected out of the city.

One death in the 1936 group was that of a woman over 70 who was found to have typhoid fever, by the presence of a positive blood culture just prior to her death, and by significant post mortem findings. The age groupings otherwise follow the usual trend, although it is rather unusual to have a person of 73 develop the disease.

Although only five proven carriers were found in the group, undoubtedly if more extensive investigation were possible this group would yield the largest number of cases. Insanitary conditions were found in seven cases; three of these cases lived in close proximity to each other, and all became ill within one month, as well as having used a foul privy vault in a public garage which emptied into a river.

Six cases were fairly definitely traced to the ingestion of raw clams which came from polluted waters. In three cases which were infected out of the city, no definite sources could be traced. In two of these cases a known carrier was involved. In the eleven cases in which the source of the disease was not found, it is believed that carriers undoubtedly played an important role.

Twenty of the cases occurred in wards where the income level is low and housing is bad; four of the cases occurred in localities where the income level is unusually high and housing conditions are excellent. The other ten cases occurred in average families with good housing.

Seven cases occurred in one ward, and two of these cases in one family at a four-year interval, although no carrier has ever been discovered as a source of infection in this family. Antiquated outside toilet facilities and extremely insanitary conditions were present.

Sanitary control, chlorination of water, and pasteurization of milk have apparently prevented epidemics. A better check over a period of years of people who have had typhoid fever, undoubtedly the source of most infections today, the elimination of pollution from harbor waters, or at least the prohibiting by law of the taking of shellfish from these waters, and the prohibiting of bathing in them, might help materially in preventing some of these cases.

Better housing undoubtedly would favorably influence the morbidity rate. Immunization where there is a possibility of exposure is definitely known to prevent the disease.

City Smoke and Its Health Effects

ECONOMIC losses due to imperfect combustion of fuel; extra expense of cleaning clothes; losses due to disfigurement of residences, office buildings and factories; losses due to soiled merchandise in stores; injuries to grass, shrubs, and trees bordering the streets and in many parks; loss of daylight and ultra-violet light, are among the losses due to smoke given in a report before the Congressional Sub-Committee on Public Health, Hospitals and Charities, by the United States Public Health Service. The last item refers to a very real injurious effect on health. The successful shutting-out of ultra-violet light in our cities by smoke keeps this health-giving ray from maintaining the health of the urban population at a time when the sun is in the sky for a shorter period during each 24 hours.

Various estimates have been made of the economic losses due to smoke, ranging from $10 to $30 per person per year. The studies which have been made on the effect of a smoky atmosphere on the loss of daylight and of ultra-violet light show that the amount of ultra-violet light was in some instances 50 per cent greater in the country than in the city under study.

Winston-Salem Owns a New Abattoir

WINSTON-SALEM, N. C., recently put into operation a modern and complete abattoir, the first operated by the city since 1921. For many years, the city had no abattoir, the meat being killed in the country, brought into the city and inspected at the City Market before being allowed to be sold to retailers for distribution to the consumer. The city had no supervision over the slaughter of the meat, and there was no inspection of the animal prior to its being killed.

Realizing the need more and more as the time went on, city health authorities made a stronger and stronger effort to have the city construct a municipally owned and operated slaughterhouse. The ambition was finally realized when money was obtained through PWA for the construction of the plant. There is no competition with any local slaughterhouse. For several years a slaughterhouse was operated near the city by private interests, but it became necessary for the Health Department to close it. The new municipal plant is modern in construction, layout and equipment, and is operated by Harvey J. Carter, as Manager.

R. ALTON JACKSON.

INTERIOR OF THE NEW MUNICIPAL ABATTOIR OPERATED BY THE CITY OF WINSTON-SALEM, N. C.

LAYING *the* FOUNDATION

for the

NEW YEAR

For the past seven years we have endeavored to bring before the members of the water works fraternity the message of AQUA NUCHAR and through its application the furnishing of a water that is palatable. In that period close to one thousand plants have used this product — some daily, others only intermittently, and then when faced with the severest taste and odor conditions. We feel conviced there is a dose of AQUA NUCHAR that will eliminate these tastes even under the worst conditions but in so doing, on the surface, the cost seems exceedingly high and has frequently been the means of not considering its application.

Our recommendation for the New Year is that consideration be given to the daily application of AQUA NUCHAR in small dosages, so that the plant will be properly seeded and a gradual improvement made in the water so that when severe tastes and odors are encountered in the raw water supply all that is necessary is to step up the dose to a point sufficiently large to eliminate those tastes. Actual experience has shown that this is economical, and from a survey made of a number of plants—and using the per capita consumption of 100 gallons daily—it is estimated that the per capita cost of furnishing palatable drinking water using AQUA NUCHAR is slightly over 3c per year.

E. A. SIGWORTH

During the past seven years, since AQUA NUCHAR has been introduced, we realize fully that it was during a period when many of the municipalities were pressed for funds and all economical measures were adopted to keep within the budget requirements. This period is gradually passing and more funds are available. We feel now is the time for the furnishing of a palatable water, since you are already furnishing one that is safe.

You have noted from the daily press the rising prices in practically all commodities and we know that you will be pleased to learn that AQUA NUCHAR will be available for the calendar year 1937 at prices no higher than have prevailed in the past.

INDUSTRIAL CHEMICAL SALES
Division **West Virginia Pulp & Paper Co.**
230 Park Avenue New York, N. Y.

JANUARY, 1937

Vol. LII, No. 1

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

Dirt Street Maintenance

Experience, Methods and Costs with Oiling, Plant-Mix and Road-Mix

By GEORGE M. SHEPARD
Chief Engineer, Department of Public Works, St. Paul, Minn.

IN public service the most troublesome problems are generally the ones which concern most directly the daily life and comfort of the public. With about one-half of the total mileage of streets in St. Paul graded but unpaved, it is evident that the maintenance of these so-called "dirt" streets is a troublesome problem, particularly in view of the drastic reduction of the past four years in maintenance funds.

In St. Paul there is a total of 870 miles of streets, 251 miles of which are paved, 419 graded, and 200 unimproved. No attempt has been made to maintain unimproved streets, although occasionally ungraded alleys are bladed and oiled. For a number of years past, our grading specifications have required that a suitable surfacing material, from gravel either found on the job itself or hauled in from outside pits, be placed on the roadway surface. This in itself, by giving a fair degree of material, has simplified the later question of bituminous treatment for stabilization purposes.

Oiling Begun for Dust Prevention

In 1913 the oiling of a small mileage of streets began as a substitution for sprinkling with water as a dust-prevention measure. The mileage so oiled was gradually increased to a maximum of over 400 miles in 1931, but was reduced thereafter owing to delinquent assessments, so that 374 miles of dirt streets were oiled in 1935. During recent years the sprinkling of dirt streets with water has been entirely discontinued. The assessment of the cost of sprinkling as a means of laying dust is provided in the city charter, and this has been held to apply to sprinkling with oil as well as water. In 1935 a total of $125,000 was assessed against property on the above mileage of streets for oiling, 975,000 gallons of road oil being used.

Surface Treatment

It is not the intention here to outline a method of surface treatment which may be generally applicable, but merely to indicate what has been done in St. Paul, mainly with materials on the ground, to stabilize street surfaces, reduce maintenance costs, and improve riding quality.

Up to 1932, road oil had been applied for the sole purpose of dust prevention. In order that the oil might penetrate, it was in the past the practice to scarify and blade the streets at least every two years. The cost of scarifying and blading was paid from the regular budget Street Construction and Repair Fund, while the oiling cost was assessed to the property. From the standpoint of street maintenance, the periodic scarifying and blading of streets was not satisfactory. The uneven compaction of the material in the surface after blading resulted in depressions which collected water, and as a result the surface soon became full of chuck-holes. Following re-scarification, a thin coat again formed, which broke through, and the same cycle followed.

The period of scarifying and oiling for dust protection before 1932 had, however, accomplished one purpose, that is, the impregnation of the surface by bituminous material to a depth of from 3 to 5 inches. A drastic cut in the Construction and Repair Fund in 1932 made it necessary that the expensive process of scarifying and blading be discontinued, or at least greatly reduced. It appeared that the process of oiling for dust prevention, the cost of which was assessable, could advantageously be combined with the street maintenance operation. An analysis of the failure of the dirt street surfaces indicated that, in general, chuck-holes were formed by low or soft areas remaining after the scarifying. The surface was brought to a reasonably uniform density by filling chuck-holes and depressions with a cold asphaltic mix locally known as "cold patch," mixed at the city asphalt plant. The irregularities in the street surface were then planed out by the use of a heavy-duty road disc planer, and about one-tenth gallon per square yard of No. 2 road oil was applied, followed by sanding with coarse sand. The discing operation gave the street a slightly grooved appearance, but the depressions were eliminated and uniform crown and longitudinal grade provided. Loose material from the discing was either bladed to the side of the street to fill depressions, or left in windrows and removed by hand. The oil is applied with a distributor at a temperature of about 140

degrees F., the sand being applied with a spreader. While chuck-holes still developed to a certain extent in the first years of this surface treatment, these were filled with "cold patch" as soon as possible, this work being done by a special crew with a truck and two men, the material being merely spread loose and allowed to iron out under traffic.

Surface Applications Decreased Maintenance Costs

The continuation of the application of the surface coat has resulted in decreased maintenance costs on streets to which it has been applied for several years consecutively. In fact, on certain streets in 1936 following yearly surface treatment application since 1933, only a small amount of road oil, as light as 0.07-gallon per square yard, termed a "fog coat" by the crews, was necessary. The use of road oil was reduced from 0.34-gallon per square yard of dirt street in 1931 to 0.15- in 1936. Either oiling or surfacing operations can be accomplished much more satisfactorily where curbing or even a cobblestone gutter is in place to retain the gutter.

COLD PATCH SPECIFICATION

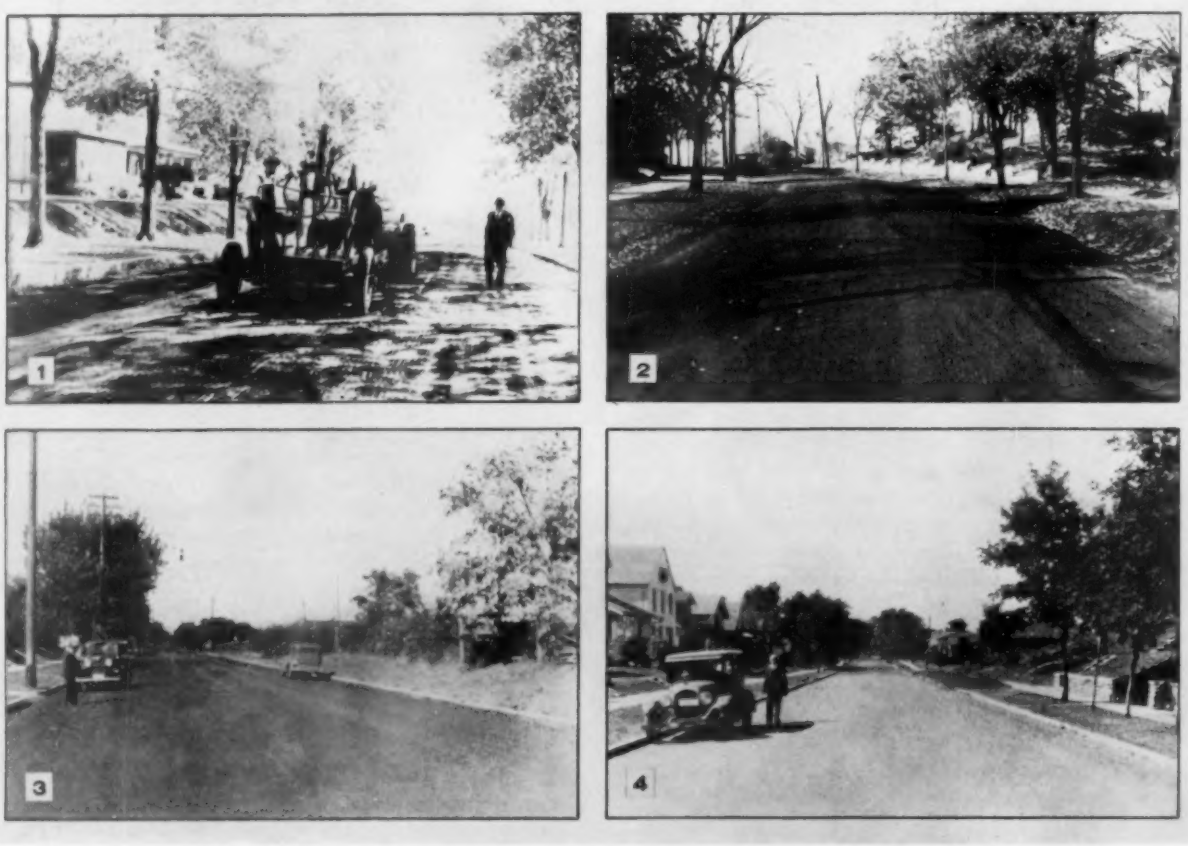
Paving asphalt (60-70) penetration	1.00%	by weight
Road oil No. 3	3.40%	" "
Sand—1 part fine asphalt sand; 1 part coarse asphalt sand	60.60%	" "
Buck-shot gravel (⅜" down)	35.00%	" "
	100.00%	" "

The cost of cold patching on dirt streets is approximately $0.003 per square yard. Over the past several years an average of 6,600 tons of this cold mix has annually been manufactured at the city plant for use on dirt streets, at a cost of approximately $3 per ton, including plant charge, overhead costs, etc., but no hauling or placing costs.

Discing and blading, including all labor and equipment costs, is being done for approximately $0.01 per square yard. One-tenth gallon of No. 2 road oil, together with the necessary sand, is applied, at a total cost, including equipment, labor and overhead costs, of $0.015 per square yard. To this must be added the cost of cold patching and also any additional work of higher type which may be done from time to time. The rate of assessment to the property for oiling is approximately $0.04 per front foot per side for a 32-foot street. Occasionally a somewhat more expensive type of surfacing treatment is placed. When this is done, the street is disc planned and a primary coat of No. 1 road oil added to settle the dust and consolidate the gutter area. A surface coat consisting of cutback asphalt and trap rock screenings is then applied, with no rolling. The cost of this work, including 0.115-gallon of No. 1 road oil, 0.139-gallon of No. 2 cutback asphalt per square yard, and 10.15 pounds of trap rock screenings per square yard, has been approximately $0.05.

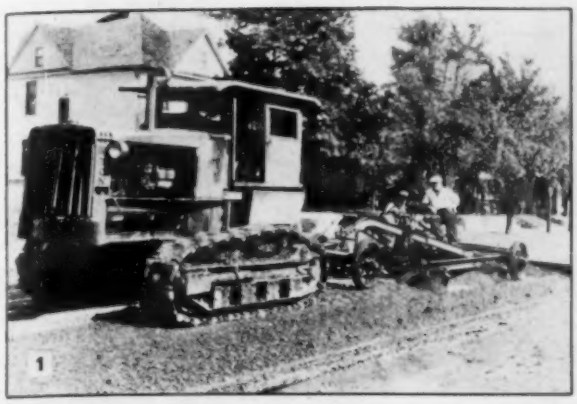
Oil and Asphalt Specifications

Following are the St. Paul specifications for road oil



PREPARATION AND SURFACE TREATMENT OF OILED STREETS IN ST. PAUL, MINN.

1. Disc-planing a typical oiled street before surface treatment. 2. Street treated with No. 2 road oil and sand after disc-planing. 3. A street with curbs, treated similarly to that shown in photograph 2. 4. Street surfaced with cutback asphalt and trap-rock screenings after disc-planing



RESURFACING WITH MIXED-IN-PLACE MATERIAL IN ST. PAUL

1. Mixing material in place for a 1-inch surfacing. 2. A typical newly mixed-in-place street, using material from the street and bank-run gravel. This street was not rolled. 3. Rolling a mixed-in-place surface with a 10-ton steam roller. 4. A completed mixed-in-place street after rolling and service for a few weeks

and cutback asphalt. The No. 1 road oil is used for initial oiling where rapid penetration is required. No. 2 oil is used for oiling of sandy soil and for surface coating. No. 3 is utilized in the manufacture of cold patch material and plant mix.

ROAD OIL NO. 1

Road oil No. 1 shall be furnished in four grades and shall meet the following detailed specifications:

Grade	Minimum Per Cent 100 Penetration Residue	Viscosity Furol
a—Extra light	40	20- 30 at 122° F.
b—Light	50	35- 60 at 122° F.
c—Medium	60	60-180 at 122° F.
d—Heavy	70	80-200 at 140° F.

Total bitumen (soluble in carbon disulfide) not less than (%)..... 99.5
Flash point, not less than (° F.).....200
Loss on evaporation 325° F. 50 gm. 5 hrs., not more than (%)..... 8
Ductility of 100 penetration residue at 77° F. not less than (cm).... 75

ROAD OIL NO. 2

Road oil No. 2 shall meet the following detailed specifications:

Asphaltic residue of 100 penetration (%) minimum..... 55
Viscosity, Furol, at 122° F.....50 to 125
Total bitumen (soluble in carbon disulfide) not less than (%)..... 99.5
Flash point, not less than (° F.).....170
Loss on evaporation, 325° F., 50 gm. 5 hrs., not less than (%) by weight 15
Ductility of 100 penetration residue at 77° F., not less than (cm)....100
Ductility of 100 penetration residue at 39.2° F., not less than (cm).. 5
Viscosity, Furol at 122° F. on 5 hrs. 325° F. residue not less than....800

ROAD OIL NO. 3

Road oil No. 3 shall meet the following specifications. It is for use in plant mix—graded aggregate type. The bituminous material and 100 penetration residue derived therefrom shall be homogeneous:

Asphaltic residue of 100 penetration (%) minimum..... 75
Viscosity, Furol, 122° F., maximum.....1,500
Flash point, not less than (° F.)..... 200
Soluble in carbon tetrachloride, not less than (%)..... 99.5
Ductility of 100 penetration residue at 77° F., not less than (cm)..... 100
Ductility of 100 penetration residue at 39.2° F., not less than (cm). 5
Loss at 325° F., 50 gms., 5 hrs., not more than (%)..... 6

The specific gravity of the residue after the above heating for 5 hrs. at 325°F., shall not be greater than 1.00.

SPECIFICATIONS FOR CUTBACK ASPHALTS

	Light No. 1	Medium No. 2	Heavy No. 3
Flash point, not less than (° F.).....	80	80	80
Furol viscosity, 122° F.....	80-160	200-400	...
Furol viscosity, 140° F.....	...	...	275-400
Distillation per cent by volume—			
Total to 374° F., not less than.....	5	...	...
Total to 437° F., not less than.....	12	10	3
Total to 500° F., not less than.....	20	15	12
Total to 600° F., not less than.....	25	20	14
Total to 680° F., not more than.....	40	35	30
Tests on residue—			
Penetration, 77° F., 100 g. 5 sec....	60-120	60-120	60-120
Ductility, 77° F., not less than (cm).	100	100	100
Total bitumen (soluble in carbon disulfide), not less than (%).....	99.0	99.0	99.0

Mixed-in-Place Surfacing

Mixed-in-place surfacing is used as a stabilization measure on dirt streets not previously oiled, as well as for the addition of surfacing material on streets previously oiled or having a hard surface. On dirt streets not previously oiled, the street surface is first scarified to a depth of 4 to 6 inches by blade with scarifying attachment and

tractor or by motor patrol. The material is thoroughly broken up and stones over 2 inches in diameter removed.

No. 1 road oil is then applied at the rate of approximately 0.3-gallon per square yard per application. The material is mixed by motor patrol or multiple blade. We have found it better to place the oil in two or three applications as the blading progresses than to apply the entire amount at one time. After the material has been thoroughly mixed and impregnated with oil, the street is opened to traffic. After the traffic has packed the surface, the street is again bladed to a smooth contour, soft spots are repaired by cold patching, and in some cases a seal coat is applied as previously described. The cost per square yard of this work is as follows:

Labor, including 10% overhead	$0.018
Road oil, .74 gallon—applied	0.052
Equipment cost	0.013
	$0.083

Where necessary to add material or where the expense of cutback asphalt in place of road oil is warranted, these costs of course will be increased. A mixed-in-place surfacing was laid on an old compacted surface in Burgess Street. In this case the street was disc planed and bladed, a light coating of No. 1 road oil was applied as a primer and to consolidate the gutter, and a 1-inch surfacing of trap-rock screenings and cutback asphalt mixed in place was applied. This street was surfaced in 1933 and has required no maintenance since. The cost per square yard is as follows:

Labor, including 10% overhead	$0.034
Road oil No. 1, .09 gallon	0.005
Cutback asphalt No. 3, .68 gallon	0.044
Trap-rock screenings, 79 lbs.—⅝" maximum size	0.069
Equipment	0.046
	$0.198

For a 2-inch thickness using similar materials, the estimated cost would be approximately $0.30 per square yard.

Plant-Mix Surfacing

While the foregoing methods have given satisfactory results on many miles of dirt streets during the past four years, there unquestionably should be more construction in the residential districts using a low-cost plant-mix surfacing which could be assessed against the property at a rate of from $0.50 to $0.60 per square yard. With better business conditions, more of this class of work will be done. At the present time very little of such plant-mix bituminous surfacing has been laid on dirt streets, although in alleys a considerable yardage is now being placed in conjunction with grading, the cost of both grading and surfacing being assessed. An item of expense generally necessary in connection with plant-mix surfacing is the cutting-down of excessive crowns on dirt streets. During the past three years a considerable amount of this work has been done in St. Paul by CWA, ERA and WPA labor, either by hand or by the use of an elevating grader and trucks. The following plant mix is used for the surfacing of alleys, a 2-inch thickness being used:

	Typical Mix	General Limits
Paving asphalt 60 to 70	4.13%	3% to 4% by weight
Road oil No. 3	0.80%	1.3% to 2% " "
Sand—2 parts fine asphalt sand; 1 part coarse asphalt sand	48.32%	45% to 57% " "
Buckshot gravel ⅝" maximum	46.75%	43% to 50% " "
	100.0%	

The upper 3 inches of the subgrade is made up of good surfacing material found either on the job or hauled in from outside. The subgrade is bladed and rolled with not less than a 5-ton roller before oil is applied. After grading, the subgrade is given an application of from 0.3- to 0.5-gallon per square yard of No. 1 road oil which is allowed to penetrate for approximately 24 hours. Plant-mix is then applied at the rate of about 200 pounds per square yard, giving a thickness of 2 inches, which is raked to grade and rolled. The surface is swept with cement before the last rolling. No header or forms of any kind are used on the sides. The cost of this work per square yard, exclusive of preparation of subgrade, is as follows:

Labor, including 10% overhead	$0.05
Plant mix	0.35
Hauling plant mix	0.04
Prime coat	0.04
	$0.48

The examples given here are typical cases employed in our street maintenance work, many variations of which are of course required as various materials and conditions are met. During the past year considerable experimentation has been done with emulsified asphalts, but the final results will not be available for another year or two.

Administration

All street work is under the general supervision of the Commissioner and Chief Engineer of the Department of Public Works. The work is directly in charge of an Assistant Engineer in the Department, the city being organized for this purpose from the central office, rather than from the various wards. Both the oiling and the street maintenance are done by the regular organized street maintenance crews. Equipment is maintained by the Municipal Equipment Bureau, operated under the Department of Public Works and charged with the maintaining of all city equipment. The street maintenance crews are kept more or less intact throughout the year, the organization being the nucleus for snow-removal work during the winter.

"High Cost" of State and Local Government Here to Stay

INSTEAD of holding out to the taxpayers of New Jersey unrealizable hopes of lower governmental costs, the New Jersey State Planning Board has faced frankly the problem of public expenditures and has issued a statement from which the following excerpts are quoted:

"The high cost of government is here to stay, for the simple reason that it is necessary to maintain the increasingly high standard of public service demanded by the people of the state. . . . The Board finds that the present tax burden—relatively enormous as compared with earlier days—will probably increase rather than decrease in the course of years; and that, while improvements are possible, particularly in the matter of public borrowing and spending practices, many suggested reforms are calculated to provide better services for the money expended rather than to effect important savings. . . .

"We insist upon more public conveniences, more comfort, a wider spread of educational advantages, and more speed, than we did twenty years ago, and we have either to pay the bill or go back to the little red schoolhouse and dirt roads. The two largest items among public expenditures in this state are for schools and highways. There are more boys and girls now, and a far greater proportion are receiving the benefits of a high school training; and motorists would not tolerate the dirt roads of yesterday. The problem is to get the most for the money expended. . . . Those two great governmental activities are the result of the demand of citizens for these services. *Rising taxation is commensurate with the rising public standard of living.*"

Vienna Builds a Scenic Highway with Views of the Danube River

For Citizen and Visitor Alike, at All Seasons, This Highway Provides Beauty and Pleasure

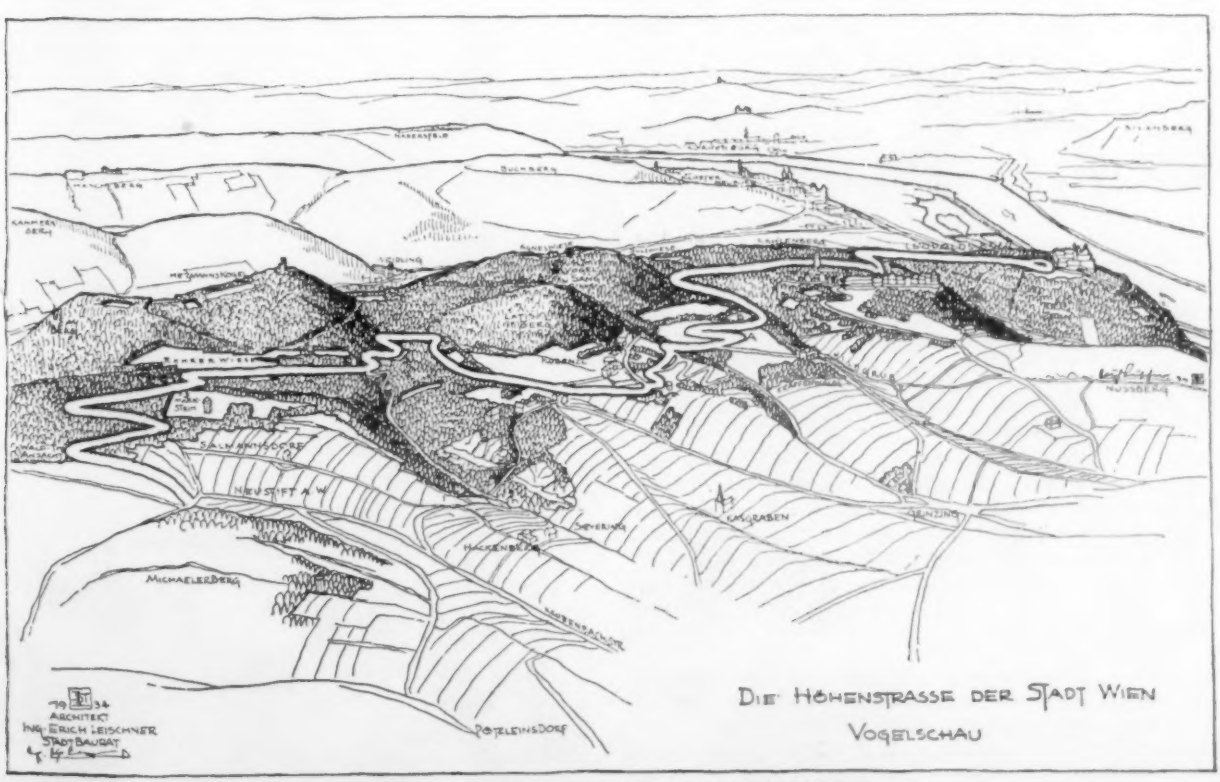
THE idea of a scenic highway in the mountains above Vienna, Austria, was conceived by Dr. Karl Lueger, Burgomaster of Vienna, in 1905. Construction began on May 18, 1934, and the first section was completed on October 16, 1935, by the Vienna Municipal Construction Bureau. This beautiful city charms hundreds of thousands of visitors each year, who enjoy its art treasures, its fine parks and the much-sung Danube River. Many of the beauties of the Vienna landscape have heretofore been denied to the tourist who has not sufficient leisure to wander on foot, and the Danube eludes him because of the presence of railroad yards, warehouses and shipping establishments on its right shore.

Commemorating the opening of the first section of this highway in 1935, Burgomaster Richard Schmitz said: "This work is blessed with the spirit of the new order in Vienna and Austria which substitutes fruitful accord for destructive discord. For this great work the Federal Capital City of Vienna has the approval of the Federal Government, for which I take pleasure in expressing the gratitude of the city of Vienna. One heartfelt comment on the social significance which the construction of the Vienna Scenic Highway has under present circumstances: work and wages for many hundreds of the unemployed sons of Vienna and great numbers of craftsmen."

The new Scenic Highway links a number of magnificent lookouts already known to hikers. The highway is illuminated and has special pathways for pedestrians. From the city it rises in two wide curves and affords the first sweeping views of the city and the mountains as far as Schneeberg. Through its connection with another section, a continuous highway will be afforded between Vienna Valley and the summit of Leopoldsberg.

Simultaneously with the construction of the highway, opportunity was afforded for the development of new residential sections. Water from high springs was brought to the summit of Leopoldsberg and Kahlenberg, and electric light and power lines were provided, offering further inducements to the development of modern settlements.

The first section to be built was the Cobenzl-Kahlenberg



BIRD'S-EYE VIEW OF SCENIC HIGHWAY OF CITY OF VIENNA
See photograph on the front cover of this issue

ONE OF THE SWEEPING CURVES ON THE VIENNA SCENIC HIGHWAY, SHOWING A VIEW OF THE DANUBE, THE HEAVY-GUARD WALL, AND BLOCK PAVING

portion. The existing highway linking these two sections was utilized and its width increased to 8 meters, and at the same time the alignment and visibility were improved to meet modern traffic conditions. The new Scenic Highway has a maximum grade of 6 per cent. Where it crosses an old cogwheel railway line, the curvature is slight and the maximum grade is reduced to 3 per cent. At all curves the roadway is widened for safety.

At the junction with the old cogwheel railway line the highway goes along the northern slope of Kahlenberg, with a maximum grade of 4.6 per cent as far as its summit, and then turns to a new parking ground 164 feet wide and 578 feet long, which will accommodate 400 vehicles. By clearing an area of about 11,960 square yards for this parking ground, magnificent vistas were opened up in the direction of Leopoldsberg and the upper valley of the Danube as far as Kreuzenstein Castle.

Reinforced concrete culverts and all earthwork and other drainage facilities were prepared in advance of actual highway construction, and in the summer of 1935 the pavement, consisting of small stone blocks on macadamized base and occasionally on concrete base, was laid so that this division of the highway was completed in the fall of 1935.

The earthwork for the continuation of the Scenic Highway from Kahlenberg to Leopoldsberg is partly completed. The highway leaves the Kahlenberg Heights and drops on a grade of 6 per cent into the woods toward Elizabeth Meadow. On the saddle between Kahlenberg and Leopoldsberg it continues on a roadway 20 feet wide on a 2 per cent up-grade along the southern slope of Leopoldsberg to a knoll which is the north end of the Scenic Highway.

In general, not much hard rock was uncovered. In the lower section some calcareous sandstones and marls were encountered, as well as alternating strata of sound, resistant calcareous sandstones and clay marls which disintegrated when exposed. The prevailing formation at the parking ground heights is a fairly sound sandstone which could be used as a road-base material.

As many as 500 laborers were employed on the work at one time. To this number of directly employed men should be added the great number of those engaged in the production and transportation of the required structural materials. The highway is about 7.46 miles long, of which 3.85 miles is the section from Krapfenwald Road to Leopoldsberg.

The weather conditions in the summer of 1935 favored the progress of the work so that the Cobenzl-Kahlenberg section was completed. A 1,641-foot section on the Krapfenwald Highway beginning at its junction with the Cobenzl Highway has also been improved as to alignment and sight distance, and its width increased to 26 feet. This required the construction of a heavy retaining wall over 20 feet in height, protected with a revetment of masonry to take up the earth thrust.

Roof Parking to Relieve Street Overcrowding

THE latest place for parking the shopper's car is on the roof of the very store in which he is making his purchases. Fred Meyer, Inc., Portland, Ore., nine-department-store chain, is a pioneer in this attempt to dissipate traffic congestion and bring residential neighborhoods closer to shopping centers. The roof of its single-story 22,750 square-foot "Hollywood" store is covered with a car-parking marquee, free for the use of the store's patrons.

Local architects, Claussen & Claussen, have designed a cantilever construction which will overlap the sidewalk, reaching to the curb on all sides. Boosting the cost to over $100,000, this will add 6,900 square feet, or 25 per cent of the building area, to parking space, at the same time making window shopping comfortable in all kinds of weather. The parking marquee is reached from the street by double ramps and stairways, and elevators are provided for the shopper who wishes to descend directly into the store.

Marshall Field Company, in Chicago, has its roof parking facilities next door. A new building is being erected adjacent to the company's Evanston store, the interior of which will be leased to Firestone but the roof of which will be run by Marshall Field to provide parking space for the store's customers.

Such a plan as this should have a substantial effect in relieving traffic congestion in crowded shopping areas. Lately, many traffic engineers have recommended that new business structures erected in congested areas should be required by law to contain off-the-street parking facilities for all the new traffic they create. Some such arrangement would add considerably to the comfort of the harassed city shopper and lop many millions of dollars annually off the traffic congestion expense account.

PARKING ON THE ROOF OF A PORTLAND, ORE., DEPARTMENT STORE

To Meet the Housing Needs of the Lower Income Groups

*A Tentative Program for Federal Cooperation with Local Governments and Private Enterprise**

By FREDERIC A. DELANO

DISCUSSIONS of the housing program of the Federal Government in the Central Housing Committee have shown the serious problems of policy and method which lie ahead. Either inactivity or hasty, uncritical action is undesirable. The following general statement of a Federal program, prepared on the basis of discussions during the past year and a study of European problems, is offered for consideration.

Housing is an important factor in our national prosperity and social welfare. Those citizens who lack decent house room are just as incapable of playing their part in our community life as they would be had they been left without education. The need for good housing for all presents a problem in which the Federal Government must be deeply interested.

Because of the wide local and sectional differences in circumstances, however, housing is in many ways a very local matter; and success in handling it must depend on local knowledge and a considerable degree of local sense of responsibility. The Federal Government should seek to stimulate and aid local efforts. One of its most obvious concerns should be to secure appropriate action on the part of private enterprise to undertake the provision of the required dwellings so far as they are able to do so, and for the rest, to encourage the state and local governments to provide that this urgent need is completely met. To this end they should be prepared to give the most efficient guidance and assistance, together with generous financial aid, so that the local authorities may be able to carry out this duty without having to bear an undue strain.

I. The Need of Research and Planning

One obvious responsibility of the Federal Government is to carry out technical research in regard to economical methods of financing, managing, and constructing dwellings. The program of the National Bureau of Standards should be expanded to provide for a more complete study of building materials and methods of construction. Whether or not an economical prefabricated house may be evolved, it is increasingly evident that in any case many of the units of the structure may be prefabricated. The development of such methods might allow the small builder or contractor to continue to compete on nearly equal terms with the larger organizations, as he often did in the past because of his freedom from items of expense such as overhead and advertising.

The Bureau of Standards should be enabled to construct experimental houses in order to study the relation of various materials and units in an actual structure. Those Federal agencies which have built low-rental housing projects should contribute complete studies and analyses of their experience regarding housing problems, for comparison with that of municipalities and limited-dividend organizations.

Economic and statistical research will form a necessary basis for any successful program. Of special importance for study are means of securing a more favorable relation of rents to costs. The Federal Government is in a better position than any state or private corporation to carry out such research. Studies in community control and development are particularly needed. The Federal Government could also be of great service by furnishing technical consultants on housing and city planning to those municipalities which seek advice.

II. Aid and Encouragement to Private Enterprise

Governmental activity should always be carefully restrained from encroaching on the natural or proper scope of private enterprise. Furthermore, one of the principal housing functions of the Federal Government should be the encouragement of private construction.

(a) *Educational Activity.*—The results of Federal research should be made available to the general public, so that the average citizen may understand the problems involved in home construction and ownership. Special effort should be made to show the small contractor and builder how he may take advantage of modern methods of small house construction, partial prefabrication and residential development. Studies in economical site planning and planning of small houses should be made available. A special effort should be made to demonstrate the economy of neighborhood planning. By following such methods, and by avoiding the use of unnecessary or extravagant equipment, the builder may find a tremendous market within the lower income groups.

(b) *Finance.*—To increase the possibilities of this market, the establishment of means to secure a sound relation between value and cost, and the establishment of a sound credit structure, are necessary. The provision of secondary credit and the insurance of mortgages are valuable methods to this end, and present activity along such lines should be continued. It will lessen the expense and the

* EDITORIAL NOTE.—The proposals which constitute this article were offered last month by the author to the Central Housing Committee, of which he is Chairman. The Committee thereupon authorized the publication of the program, and it is now offered for general consideration, although still subject to revision. Comments may be addressed to Mr. Delano at the Interior Building, Washington, D. C.

risks of home ownership for those families whose income and stability of employment justifies this form of saving and investment.

(c) *Community Planning.*—The construction and maintenance of homes, however, is a community as well as an individual problem, because every individual is concerned with the nature of his neighborhood. Community planning is necessary for sound private enterprise. The Federal Government may properly be asked to encourage and assist municipalities to adopt reasonable zoning regulations and a proper responsibility of planning their growth, enforcing the demolition or reconditioning of unfit dwellings, and eliminating areas which are social and financial liabilities. Encouragement of proper city planning is a proper field of Federal activity. An alternative method of community control of residential development is suggested below.

III. Aid to Local Governments

A more controversial question is the extent to which the Federal Government should go in the actual provision of houses. It is important to bear in mind the methods of Federal participation which have been most successful in the past in our own or foreign countries. Our constitutional system does not contemplate direct centralized action, but well-planned educational work and financial assistance have been effective in directing private and local initiative.

Federal action can be most effective by enlisting the cooperation of private enterprise and local governments. There is needed a flexible method of improving the housing conditions of our lower income groups by stimulating our construction industry, safeguarding the sound development of our cities, and giving full responsibility to the local authorities with only general guidance and assistance from the Federal Government. It should be based on the traditional method of assistance by the Federal Government termed grants-in-aid, by which local governments are enabled to assume the administrative responsibilities which they are best able to exercise.

It is impractical to depend on the home-building industry to imitate other types of private enterprise which have had so great an effect on our national development. The automobile industry is often cited in comparison. But while private enterprise took care of the industrial aspect of providing transportation by automobile, the Federal and local governments were called upon to deal with those aspects affecting the use of land and the development of cities, i.e., the building of roads and the control of traffic. Thus, in 1928 over half of all expenditures for public works in the United States, or $2,025,000,000, was devoted to the construction of roads, streets, and bridges, while in Great Britain about one-third of annual capital expenditures for public works during the past few years has gone into housing. Yet America has been generous to other social causes, such as education. The United States spent over $2,000,000,000 on her public schools in 1932, while England, with about one-third our population, spent only about $316,000,000 on her municipal elementary education during the fiscal year 1931-32. While Great Britain has emphasized decent living conditions, we have emphasized education and communications. Yet, to develop our cities properly and stimulate one of our greatest industries, some assistance and guidance should be extended to local housing activity.

Until recent years, it was never considered necessary to give assistance for the construction of homes. In our rapidly growing cities it could be assumed that the general increase in real estate values fully compensated for the decrease in the value of the structure caused by depreciation and obsolescence. The changing value of the land was thought to be in the home owner's favor. But today the possibility of a change in land values is likely to discourage rather than encourage home ownership. It seems evident that both our Federal and local governments have too great an interest in the matter not to take action.

Every effort by governmental agencies or private enterprise to provide low-cost housing in our chief cities has met the obstacle of exaggerated land prices. It has therefore been necessary to increase the number of families within a given area in order to decrease rent. The obvious result has been a further increase in land value and overcrowding with all its attendant social evils. While British local authorities have usually permitted no more than twelve families to live in one acre in publicly owned housing, most of our urban development for low income families is far more dense. The concentration of families of small means into multiple-story tenements has many undesirable effects. It is tolerable for adults alone, but exceedingly bad for families with children, because of the lack of privacy, quiet, and play space.

Our methods of assessing land values and our system of taxation have much to do with this problem. Speculative land values, arising from a hope for high returns from intensive future development, overcrowd the land and burden housing. Only the enforcement of careful city planning can restrain such speculative values, by making it clear that land in residential districts will be worth only its site value for dwelling purposes. Such planning would also lessen the burden which taxation imposes on housing, by discouraging the assessment of property at a value depending on conversion to a non-residential use. With even the most careful city planning, however, the fact that our municipalities depend for over 60 per cent of their revenue on the property tax is a heavy burden on small homes. If some effective method of controlling community development can be applied, municipalities which need to promote construction and relieve the occupants of low-cost houses of a part of their tax burden, might tax improvements at a lower rate and continue to tax land held vacant for speculative purposes.

The traditional method of community control has been by zoning regulations. Such regulations have often been drawn with so little regard for the welfare of inexpensive residential neighborhoods, and have been so loosely administered, that they have been ineffective in protecting the small owner or investor from disastrous changes in land use. Whenever possible, they should be made effective. Where further action is necessary to protect the homes of low income families, or where public housing assistance is necessary, municipal ownership of land may prove the solution of the problem.

There are many precedents for municipal ownership of land in Europe and Great Britain. Stockholm owns 20,000 acres within 9 miles from its center, and rents residential sites on 60-year renewable leases to prospective builders. Manchester, England, has developed the suburb of Wythenshawe, covering 3,500 acres of land purchased by the city at a capital advantage to the city in site costs of

$5,000,000. This development contains houses built both by the municipality and by private enterprise. Liverpool is planning a similar development.

The Federal Government gave our railways land in exchange for their services in spreading our population over the continent, and granted homesteads to any who would undertake to develop them. It would be only reasonable for the Federal Government to assist local governments to purchase land for two purposes: first, to help municipalities provide low-rent housing for families unable to afford shelter of minimum standards; and, second, to stabilize the value of low-cost residential neighborhoods whenever protection by zoning regulations is incomplete, thus promoting simultaneously the home-building industry and sound community planning. With these ends in mind, the following policy is suggested:

A. LAND ACQUISITION AND CONTROL

The Federal Government might properly offer to pay a certain percentage of the cost of acquisition of land by municipalities, on condition that the municipality, in using such land, should take suitable precautions to insure the sound development of the neighborhood. The Federal Government should be careful not to subsidize the development of neighborhoods of jerry-built houses, nor of surplus residential sections, nor of poorly planned communities. It should offer financial assistance only when municipalities follow a proper and well-considered housing and land-use policy.

The municipality, usually through a Housing Authority, might properly purchase entire neighborhoods in blighted areas or perhaps in suburban or undeveloped territory. If it wishes to buy outlying land at agricultural prices, it must consider the expense of providing streets, utilities, transportation, schools, police and fire protection, and other services, and the effect on the downtown areas of a partial drain of their population. Sometimes slum conditions can be made tolerable by draining off a part of the population, destroying the worst houses, renovating the others, and improving the general condition by light, air and healthful conditions. In many cases, however, especially if downtown slums are badly crowded, the purchase of convenient outlying land would be advantageous. The orderly development of residential neighborhoods, of adequate size to guarantee their stability, would thus be possible on cheap land, with full consideration for the cost to the municipality and individual of community services.

B. BUILDING AND FINANCING

After acquiring such tracts of land, the municipality might follow the most expedient of several courses. A first possibility would involve direct municipal housing. The local government, probably through a specially constituted authority, might directly construct low-cost housing for the lowest income groups. Or it might undertake a program of reclamation of slum areas for other than residential use, while simultaneously providing low-cost housing elsewhere for the displaced population. Strict police power measures for the demolition of unfit dwellings should be carried out in conjunction with the provision of enough homes to replace those destroyed. It might often find it expedient to renovate buildings in blighted areas, in order to preserve the usefulness of existing utilities and community services, and to take advantage of the value remaining in the structures. If it does so, it should study the experience of all housing authorities to find the most economical methods which meet standards of health and decency. If it builds outlying subdivisions, it should plan economical minimum standards and minimum-price houses.

Although the Federal Government should not encourage municipalities to be completely dependent on its help for the promotion of a housing program, the present fiscal condition and method of taxation of most local governments may make them unable to undertake such activity with only a grant for land purchase. It may be temporarily desirable, therefore, to supply additional Federal assistance. This might be in the form of either grants to municipalities, or loans to municipalities or limited-dividend corporations. Such help should be carefully administered to encourage economy in building, and resulting projects should be fitted carefully into a long-term scheme of city planning and civic development, with careful provision for adequate management.

As a second possibility, it might lease land to cooperatives or limited-dividend corporations on condition that they build, maintain, and operate low-cost housing of approved standards and rentals. If the municipality could obtain an adequate rental for its land, it would not need to insist on restricting standards to an absolute minimum, as in publicly subsidized developments.

As a third course of action, it might lease lots to private individuals or building companies on condition that they construct satisfactory homes in keeping with the general plan at a low enough cost to avoid interference with investments in homes for higher income groups. To promote such private development, corporations might be organized in which the municipality would be a partner with a partial stockholding interest. Federal and municipal grants, if used only for land purchase, could bring into residential construction the investment of large quantities of private capital. Federal insurance of mortgage loans on homes built on leasehold land, already possible under the National Housing Act, would make possible a lower cost of financing.

The Federal Government would thus be able, by the expenditure of a minimum amount of money in conditional grants-in-aid, to promote satisfactory standards of construction and of community planning. The low-cost house could be made a standard product in a protected neighborhood. It would be far easier to rent or sell at an assured value. The purchase of a home on a small equity, over a long period of amortization, would therefore be far safer than it is today. Municipal ownership and lease of land would automatically prevent land speculation and its usual result of blighted areas. Sound investments in established residential neighborhoods would not be endangered thereby.

C. ADMINISTRATION AND MANAGEMENT

An essential condition of Federal assistance should be the administration of housing developments by a permanent authority, whose members are chosen on other grounds than those of party patronage. The policy of grants-in-aid for land acquisition would promote decentralization of administration, and encourage the participation of small and medium-sized cities which are not capable of maintaining a technical Housing Authority for direct municipal construction.

Adequate management and supervision must be insisted

on for the reason that good houses may become little better than slums unless supervised and regulated. Permanent regulation of each area is necessary. If the houses are constructed and owned by the municipality, regular visits and strict collection of rents should be required. Special inspections for sanitation may be necessary. The management and maintenance of groups of houses by municipalities might make possible more economical upkeep and services, such as central heating for entire neighborhoods, and insure the preservation of a wholesome residential environment. These ends are quite as important to a community as the cleaning and upkeep of its streets.

Municipalities planning their future development would be in a position to deal with the question of irregular employment and excessive hourly wages of building workmen. Union wages in the building trades are computed on an hourly basis, predicated on seasonal and irregular work. An offer of steady employment would make it profitable for unions to consider higher annual, though lower hourly, wages. Working people should not have to pay, in the form of rent, wages for labor on their homes generally higher than they themselves receive for work of comparable value. Grants-in-aid should be regulated so as to avoid forcing up the prices of commodities and of labor.

Conclusion

The traditional constitutional methods of Federal guidance of local authorities are consistent with the most effective long-range housing policy. A program providing for decentralization of initiative and control, administered under careful supervision, and supported by Federal funds, so that the local systems of taxation will not be asked to bear an impossible burden, will be most economical and efficient in remedying our complicated housing troubles.

This policy would make it possible to build small homes without the extra expenses caused by land speculation and lack of integration in the building industry, and it would encourage the provision of low-cost public housing while discouraging construction more expensive than minimum standards justify. It would thus at once stimulate public housing, and tend to remove the evils that make it necessary.

Comments by Federal Government Officials on Mr. Delano's Proposal

John H. Fahey, Chairman, The Federal Home Loan Bank Board:

"Your outline of a Federal housing program presents the most constructive statement of national housing objectives that I have seen anywhere. They are obviously the fruit of wide observation and experience and the direct product of clear, sound thinking.

"The emphasis you place upon municipal support and control of housing, and the use of low-cost land for housing purposes, is a definite and clarifying contribution."

Stewart McDonald, Administrator, Federal Housing Administration:

"This is unquestionably the furthest and most intelligent step which has been taken on this subject since I have been close to the problem.

"The enormous amount of effort you have spent on this is compensated by the appreciation with which the work is held and the good it will undoubtedly do."

H. A. Gray, Director of Housing, Federal Emergency Administration of Public Works:

"Referring to your proposal, 'A Federal Housing Program—Related to the Needs of the Lower Income Groups,' I find the plan which you submitted to the Central Housing Committee very comprehensive not only in its suggested solution but in its understanding of the many difficulties with which the operation of a housing policy has been confronted.

"We are undoubtedly at the point where specific progress must be made as a result of a clear understanding of the factors involved. Your statement is a very constructive contribution to this immediate problem."

J. S. Lansill, Assistant Administrator, Resettlement Administration:

"Your proposed housing program for the Federal Government comprises a far-sighted and constructive policy. As a result of our work with greenbelt towns, we also have come to the conclusion that the starting point of a housing program should be immediate acquisition of sound sites and areas on which carefully planned communities can be built."

A New Activated Sludge Plant Converted from Septic Tanks

St. Thomas, Ontario, Has One of the Oldest Activated Plants in Canada

BY converting a 900,000-U. S. gallon septic tank installation into an activated sludge treatment plant, the city of St. Thomas, Ontario, was able to increase the amount of sewage it could treat to 2.5 mgd and use only two-thirds of the ground area occupied by the old plant. The sewage is entirely domestic, since half of the people in the city work for the railroad and there are few other industries. The sewage comes to the plant by gravity through three lines of 24- and two of 18-inch diameter. As the city is practically flat except for a deep ravine through its center, the sewers run on very flat grades, but they are quite deep when they reach the ravine and empty into the interceptors.

The dry-weather flow is 1.68 mgd. The sewers were originally designed as separate, but, as in many other cities, it was easier to connect storm drains and house leaders to the sanitary sewers than it was to construct new sewers for storm water, so that the amount of water increased rapidly in times of storm. Now a continuous campaign to separate the storm and sanitary sewers has placed two-thirds of the city back on the separate system, but there are still many connections for roof water that have not been disconnected.

On entering the plant, the sewage flows through a double grit chamber, which is cleaned by hand, and the sand, with a considerable amount of organic matter, is allowed to dry on a concrete platform alongside the chamber. When dry enough to handle, it is shoveled into wheelbarrows and taken away to be buried. The sewage flows over a weir, where its volume can be measured, and then to a pre-aeration tank 16 feet in diameter into which the sewage is introduced tangentially and where it passes over a series of six ridges and furrows with porous plates in each furrow. It then flows over a concrete wall built concentric with the exterior wall. In flowing over this wall, it passes through a vertical screen of ⅜-inch bars. The upward flow of the air tends to disintegrate any organic materials, and assists in keeping the screen clean.

The aeration tanks are a series of concrete cells made within the limits of two of the old septic tanks, using the outer walls of the septic tank and the thin partition walls to guide the sewage in its circuitous path through the plant. The sewage has 4½ hours of aeration in these tanks, which are in parallel. The sewage returns through a channel at the side to a cross channel at the head end of the tanks, and through six 12-inch pipes it flows into the clarifier. On the clarifier side of the wall at each pipe is a plate baffle, so that the sewage and activated sludge must flow either up or down. The baffles are 15 inches below the surface of the water.

The clarifier tanks, of which there are two, one for each set of aeration tanks, are 11 feet deep at the sides and 38 feet square, and the scraper rotates 1/20 rpm. These

ONE OF THE AERATION TANKS

Dorr clarifiers were installed when the plant was shifted over to activated sludge treatment in 1925.

Two air-lift pumps raise the sludge from the collection sump in the bottom of the clarifiers. One air-lift handles the return sludge, and the other the wasted sludge. The returned sludge is delivered to the sewage as it passes over the measuring weir, and the wasted sludge goes to the third old septic tank, which was converted into a digester. No attempt is made to collect the gases, but they are permitted to dissipate into the air through the old gas vents. The proportion of sludge which is returned to the entering sewage is not constant, but is such that a 20-minute settling in a cylinder will give 10 per cent sludge by volume.

The supernatant liquid from the digester is run to the influent sewage. Digested sludge is run onto a sludge bed and dried for ten days. The sludge is run onto the beds to a depth of 12 inches and when dry is hauled away by farmers and truck gardeners. The soil about the plant is a sandy loam, making for easy lagooning of the sludge which cannot be disposed of on the sludge drying beds. Three or four times a year the excess digested sludge is run into a lagoon just outside the limits of the plant and rapidly dries on top. This crust is broken by the next application of sludge, and the wet sludge runs in under

the crust, so that there is practically no odor from the fresh wet sludge. Once a year the dried sludge in the lagoon is piled up on one side to make way for later applications.

Air for the activation of the sludge is provided by a pair of Nash Hytor blowers driven by Canadian Westinghouse 30-hp, 550-volt, 3-phase motors with special "across the line" starters for placing them in service after current interruptions. No start-up current is used, and they have operated without trouble in this manner. A total of 1 cubic foot of air is used per Imperial gallon, 1.2 U. S. gallons, of sewage in the entire operation.

An ingenious method of permitting an untrained operator to determine whether more activated sludge should be wasted to the digester has been devised in the form of a 4-inch top from a galvanized can nailed to the end of a long pole. This is lowered into the settled sewage in the clarifier at regular intervals, and the point when the bright disc disappears in the sewage is determined. By calibration a depth has been determined which gives satisfactory operation, and if the disc disappears in the turbid liquid before that point, more sludge is pumped to the digester.

The St. Thomas activated sludge sewage treatment plant is operated under the direction of W. C. Miller, City Engineer, who was largely responsible for the design which made possible the conversion of the old septic tanks into activated sludge units.

Automatic Chlorination Solves Potential Water-Pollution Problem

Attendance Replaced by Automatic Machine. Which Gives Better Results

THE Fisher Hill Reservoir of the Metropolitan Water District of Boston is a relatively small equalizing reservoir located at the top of Fisher Hill in the town of Brookline. One 36-inch pipe serves as both inlet and outlet. In general, the flow is into the reservoir during the night and out during the day, with a total change of water averaging about 5 million gallons daily, but with rates of flow from nothing to as much as 12 million gallons daily. The reservoir is not covered, and its effluent has shown B. coli periodically, thus warning of a potential pollution danger. For some time the reservoir effluent was chlorinated manually, using a sodium hypochlorite solution. This required two special operators for sixteen hours of the day, who adjusted the rate of chlorination to the flow by orthotolidine tests made from samples taken from the main about 300 feet below the reservoir.

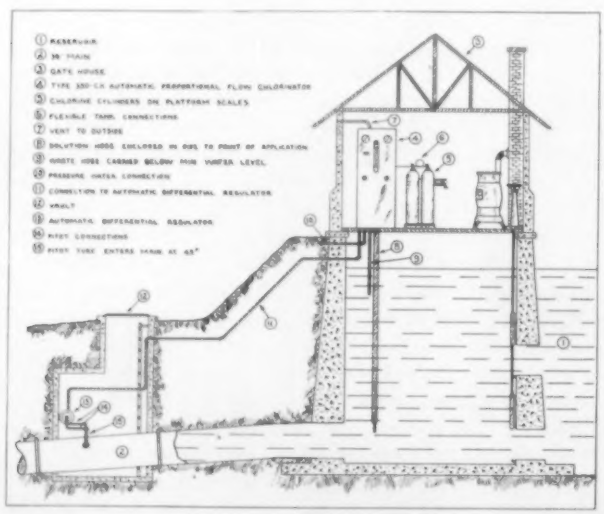


DIAGRAM OF THE CONTROL AND CHLORINATION CHAMBER OF THE FISHER HILL RESERVOIR OF THE BOSTON WATER SUPPLY

In order to overcome errors in treatment due to the time period between the tests, as well as to take care of unexpected outflows during the unguarded night period when the pumping station might be shut down or a fire might make an unusual demand upon the reservoir, the Metropolitan District decided to use automatic chlorination. In addition, it was desired to save the expense of the two special operators. An immediate problem was caused by the fact that most of the outflows were too small to actuate a chlorinator from a pitot tube, while a venturi tube would not only involve considerable additional expense but would chlorinate both the inflow and the outflow. This would over-chlorinate some of the water, with resulting tastes.

To meet this situation, a very sensitive pitot actuating device was developed for a Pardee Type 350 automatic proportional flow vacuum chlorinator. One of these machines with the pilot was installed in April, 1936, and has given satisfactory results ever since. It maintains, on all outflows, a continuous residual very close to 0.07 ppm at the sampling point and does not respond to inflows.

The chlorinator is mounted on the floor of the gate chamber above the reservoir. It is valved for a maximum demand of 75 pounds of chlorine per day, but has an orifice for a 30-pound maximum down to a 4-pound minimum. Water under 45 pounds pressure from a higher supply operates the chlorinator. The solution hose is run down through a guide pipe to a point of application in the flow from the reservoir.

The vault on the main for the pitot tube is some little distance from the gate-house because of the nature of the ground. Two 1-inch corporation cocks opposite and at 45 degrees from the vertical were placed in the main for the pitot tube to allow for accurate pitot surveys if desired. The control connection, a ¾-inch corrosion-resist-

ing pipe, was run without attention to grades or possible air traps. It does not carry a differential pressure, but a small flow of plain water under pressure. Air pockets in this line make no difference in operation if the pressure is adequate. The devices in the pitot vault are heavily constructed and so arranged that they cannot easily be injured, nor does flooding affect their operation.

Operation

Referring to the diagram, the pitot actuating arrangement consists only of a flow of plain water under pressure through 9, the automatic diaphragm valve, 10, the static opening of the pitot, and into the main. The pressure opening of the pitot is connected to the automatic diaphragm in such a way that the flow of water through the automatic valve is varied and made proportional to the flow of water in the main. This minor proportional flow is small, not over 1/3-gallon per minute at the maximum rate. It comes down from the chlorinator and is used there by another automatic diaphragm valve at the base of the panel, to establish and control a similar secondary minor proportional flow, which is delivered to the chlorinator. This second minor proportional flow controls a silver-lined chlorine diaphragm valve mounted horizontally on the upper left-hand side of the panel. This valve proportions the flow of chlorine to the second minor proportional flow of water, and so with the main flow of water in the main. The regular control valve on the chlorinator will set the unit for any desired rate of chlorination.

This chlorinator automatically controls the chlorine feed down to a flow through the main of ¼-foot per second. To take care of outflows below this amount, an adjustable arrangement maintains a small residual chlorine feed when the flow is below the sensitivity of the automatic devices. This chlorinates the very small outflows and also the inflows, but the amount is so small that it has not interfered with the maintenance of the desired outflow residual nor given any taste trouble.

Police Radio Facts and Results in New York Municipalities

THE New York State Bureau of Municipal Information issued on November 19 a report on police radio systems in the state. It covers individual local systems in 16 cities, 5 first-class villages, and 7 second-class villages, and outside service furnished to 14 municipalities by the systems of Nassau County, Binghamton, Buffalo and the state.

All are one-way except those at Geneva, Garden City, Spring Valley, and Williamsville. The strictly local municipal systems are listed in the accompanying table. In addition to the 689 cars equipped with radio, there are radio-equipped motorcycles in Binghamton, New York and Rochester.

Has police radio reduced the number of policemen? It has in Hornell, Poughkeepsie and Syracuse. Increased efficiency with the same number of men is reported by the municipalities of Rochester, Utica, Freeport, and Pelham Manor.

Radio Reduces Crime

What is the effect on crime of the use of police radio? Twenty cities report that crime has been reduced. Poughkeepsie and Yonkers give 25 and 30 per cent respectively as the amount of reduction. Says New Rochelle: "Marked reduction." Says New York City: "Crime has not increased during the time service has been in use, although economic conditions might have justified an increase." Says Rochester: "Has deterrent effect as well as quick apprehension of criminal." Says Freeport: "It has certainly prevented crime in this village, due to constant patrolling of five autos throughout the entire village continually day and night."

Are licensed operators members of the police department? They are in all towns except Albany, Binghamton, Geneva, Oneonta, Rochester, Syracuse, Utica and Suffern. Both are employed in Herkimer.

HOW NEW YORK MUNICIPALITIES ARE EQUIPPED WITH POLICE RADIO SYSTEMS

		Power	Frequency Kilocycles	Radio Cars
Albany	Western	500	2,141	23
Auburn	DeForest	50	2,382	3
Binghamton	Western	400	2,442	12
Geneva	Composite	50	30.1	1
Hornell	R. C. A.	15	37,100	2
Kingston	R. C. A.	15	37,100	4
Mechanicville	Western	1,665k	1,500	1
New Rochelle	Western	50	40,100	18
New York	Western	500 & 400	2,450	490
Oneonta	Composite	50	2,414	2
Port Jervis	R. C. A.	...	33,100	1
Poughkeepsie	Composite	...	...	4
Rochester	Western; Stromberg; Philco; R. C. A. Receivers	200 & 400	2,422	47
Syracuse	Western	500	2,382	15
Utica	Hygrade-Sylvania; Western	100	2,414	12
Yonkers	Western	400	2,442	24
Endicott	...	...	...	2
Freeport	Western; Stromberg	400	2,490	5
Garden City	Type 35	25	37,100	6
Herkimer	Composite	100	2,414	1
Scarsdale	R. C. A.	25	30,000-50,000	3
Amityville	...	...	2,490	1
East Aurora	R. C. A.	...	...	1
Farmingdale	...	...	...	1
Pelham Manor	Bosch	400	2,450	3
Sea Cliff	Philco	...	...	1
Sloan	Philco	25	...	1
Suffern	...	250	33.1	1
Williamsville	...	...	...	3
Buffalo	DeForest	500	2,422	..
Huntington	R. C. A.	25	2,490	..
Eastchester	R. E. L.	25	UHF	..
Harrison	R. E. L.	50	UHF	..
Greenburgh	Bodnar	...	UHF	..
Rye	Bodnar	...	UHF	..

Go Graphic!

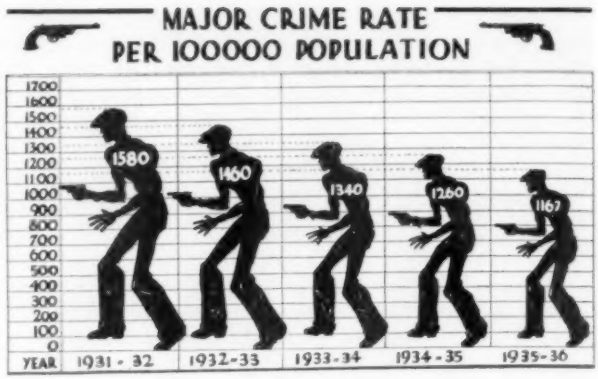
"WELL, John, the Town Report came today, and I tried to find out where those taxes we pay disappear to, but I couldn't. Some of the headings were enlightening—Health, Schools, and things—but the figures underneath are a little too much for a girl who never won any prizes in mathematics. So far as I'm concerned, we should do well to start a raid on the city treasury and get that new car this year instead of next."

If one of the reporting town officials had listened in on this conversation, perhaps he would have told the lady of the house in words of one syllable that the town roads would soon be in pretty poor condition to receive that new car if she made a very extensive robbery of the treasury. But why didn't he use a little ingenuity and imagination and make this point clear in the Town Report? What can this annual document be for if it fails to show the stockholder of the municipal corporation in clear, understandable form that his taxes are a good investment?

One copy of the usual town report, filed away for the exceptionally curious, would be quite sufficient in some communities. But here and there the depression brought increased interest in government economy, and good reports proved of real help to local officials in protecting their important functions. In increasing numbers, municipalities are building a new and valuable and attractive publicity organ. New York City, for example, has published "New York Advancing," a complete, informative, well-illustrated, readable report. The town of Topsham, Vt., has startled the public by a picture of Red Echo Jessica, its prize cow, appearing on the cover of the 1936 town report. Inside are brief summaries of budget facts. Berkeley, Calif., has decked out her "Civic Affairs" in the latest streamlined mode. It is well arranged and is full of pictures and pictorial charts which show the facts in such a manner that traditional indifference is overcome. Among other cities making exceptionally good use of graphic illustration are Cincinnati, Ohio, Bangor, Maine, Sacramento, Calif., and Norfolk, Va. State stimulation is beginning to be applied to spread this modernization movement. Vermont, under the leadership of James P. Taylor, Secretary of the State Chamber of Commerce, as heretofore mentioned in THE AMERICAN CITY, was the first to inaugurate a real state-wide campaign. New Hampshire, Maine, Massachusetts and New Jersey have fallen into line. New Jersey's slogan is "Go Graphic," and the awarding of certificates of supreme and superior merit by the New Jersey Taxpayers Association will be based on the following points:

1. Novelty and attractiveness of the cover.
2. General appearance and orderly arrangement.
3. Presentation of the financial status.
4. A striking summary of the most notable achievements of the past year.
5. Quality and substance in reports of the departments.
6. Historical and statistical data and plans for the future.
7. Schedules of distribution of expenditures over a series of years.
8. Graphic display of financial and other facts, indebtedness, delinquent taxes, relief, etc., through the use of bar charts, graphs, maps.

Good reporting aids good government. When municipal officials make the facts clear to the citizenry, public opinion is able to exercise its most mature judgment and extricate real issues from political hullabaloo. What could be more to a city's credit than an alert, interested, well-informed citizen body? The officials, too, are greatly benefited by regular and adequate reporting, for it helps them to "get across" their efforts to give necessary publicity to actual results achieved. Also in the very act of self-examination of their own performance, they can often find avenues for improvement.



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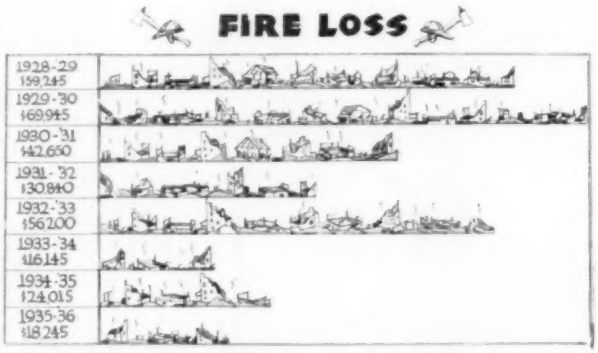
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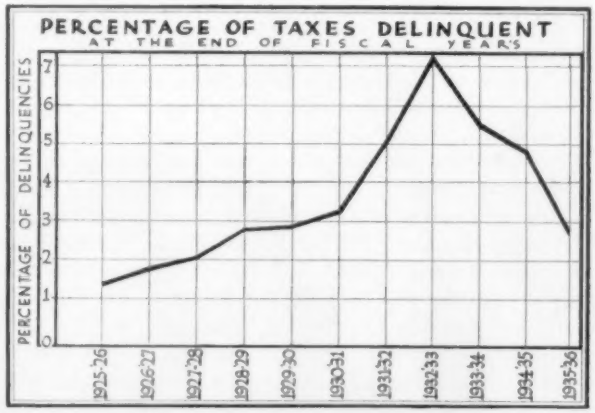

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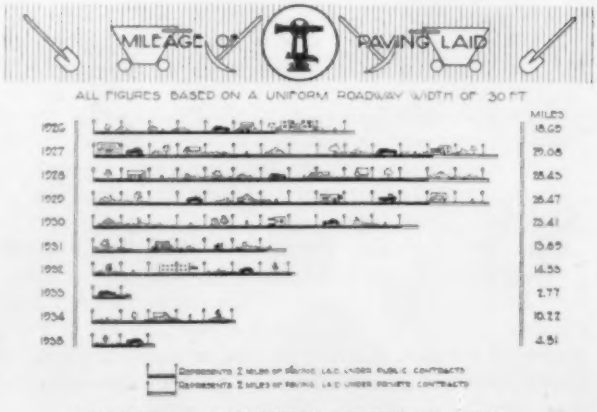

"MUNICIPAL ACTIVITIES," CINCINNATI, OHIO

Tax-Free Ponca City, Run on a Business Basis

By E. A. JONES
City Engineer, Ponca City, Okla.

THE early history of Ponca City's utility investment is an oft-told story of deficits, politics, inefficient and neglected equipment, and all the other well-known arguments against municipal ownership. In a way, probably the best expenditure the city ever made was when, between 1916 and 1921, a combined city clerk and city attorney made away with about $13,000. From that time dates the development and gradual establishment of a municipal conscience which bans the methods commonly described as "political" from city affairs, and has found expression in the following actions:

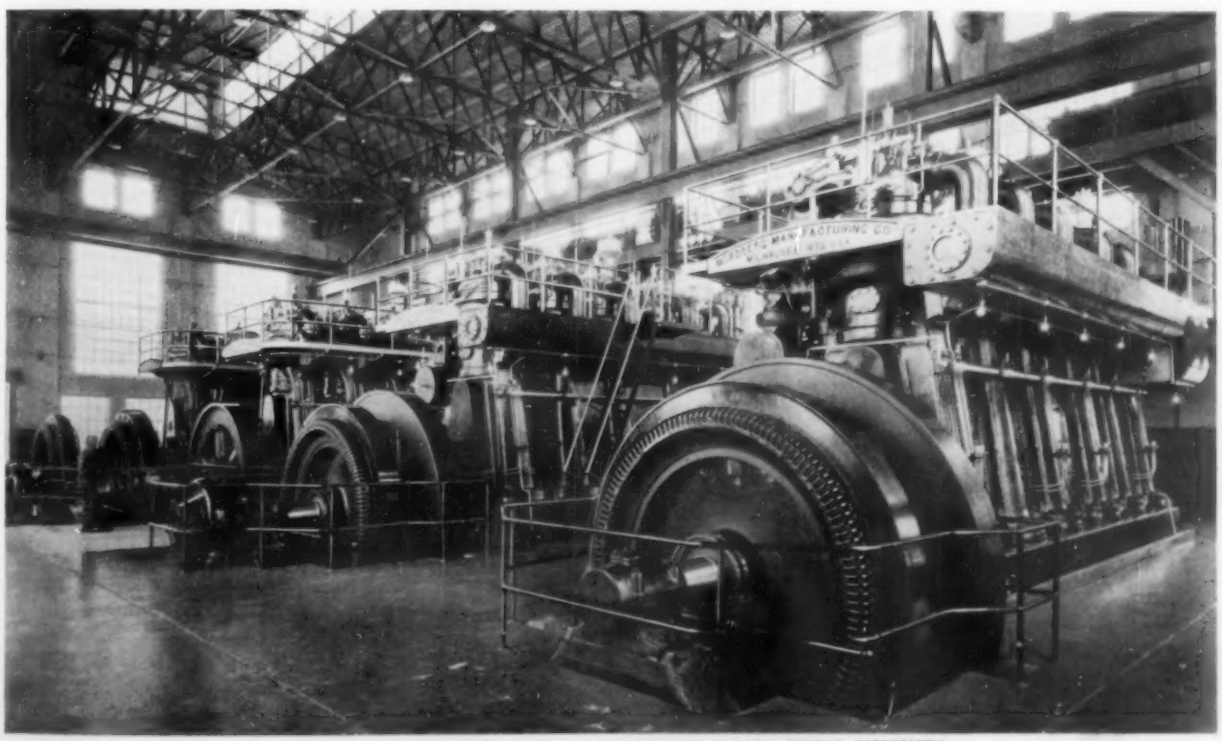
1. The adoption in 1927 of a city charter.
2. The erection in 1928 of a diesel power plant.
3. The adoption in 1931 of the method of financing all municipal operations from revenue from sources other than ad valorem tax.

County and school taxes are still collected, and a number of citizens will take for granted that a portion of the taxes they pay to the county goes for the expenses of the city government, even after five years of tax-free operation. Ponca City, with a population of only 18,000, is actually the center of a population of 20,000.

Good Men, Good Government

Ponca City has managed to enlist a force of exceptionally qualified men in every position from the Board of Commissioners to the City Hall janitor. The 1927 charter contains three provisions, not often found, which have been invaluable:

(a) The elective offices consist of three commissioners, one of whom is elected each year for a three-year term. Thus at all times a majority of the board consists of members who have been in office for a year or more. This at one stroke abolishes the "turn-the-rascals-out" system, which depends on each body of incoming officials being utterly unfamiliar with the qualifications of incumbent appointees. By discouraging hasty changes, it has contributed greatly to the development of a carefully selected and experienced body of employees. There are those who would call this "bureaucracy," ignoring the fact that a private business does not fire all its employees and start over with green help every little while. All appointments, however, terminate at the end of each fiscal year, and for cause can be ended sooner, and the selection is wholly in



THE FOUR 800-KW DIESEL ENGINES THAT PAY PONCA CITY'S EXPENSES

the hands of the commissioners. Efficiency comes entirely from their conscientiousness and from the fact that control of the board is never placed in the hands of officials without previous acquaintance with the city's affairs.

(b) The commissioners draw no salary or "meeting fee" or expenses or any other remuneration. In practice, it insures a board composed entirely of successful business men. The present personnel:

C. E. Northcutt, Mayor
Business manager of the city's largest clinic, the city's leading surgeon, former President of the Chamber of Commerce.
V. N. Souligny, Commissioner of Public Property
Head of the city's largest and oldest real-estate firm.
George F. Smith, Commissioner of Finance
Treasurer of the Continental Oil Co., whose annual budget exceeds $30,000,000.

There has been no more discussion about these men divesting themselves of their private business than if they had simply been elected to the board of directors of any private corporation.

(c) The organization of the city administration under the city manager is left absolutely open by the charter, the commissioners are authorized to delegate to him *all* the administrative rights and duties, and there are no established lines between the various departments except such as are established by allotting to each man the work he is best able to do.

Electric Plant to Be Expanded

The present financial record of the Light Department is too good to be true, owing to the overloading of the plant at the expense of needed reserve capacity. The postponement of needed additions has, however, made surpluses available to strengthen the city's position, and the expansion can now be undertaken with a much stabler economic background. Present indebtedness on the light plant amounts to about one-sixth of the appraised value. It is intended that the present four 800-kw Nordberg diesel engines, for which the capacity factor last year was 0.364, will be supplemented by a 1,500-kw unit, for which space was provided when the present building was erected in 1928. If present growth continues, it may become necessary to provide further additions in about five years.

The Water Department supplies an exceptionally high demand, reaching over 300 gallons per capita per day in peak periods, despite a low proportion of industrial use, the present supply from wells in the Arkansas River flood plain being too salty for industrial purposes. With a market available for two or three million gallons per day if a satisfactory supply could be obtained, the city voted in 1934 a bond issue of $500,000 for obtaining a soft-water surface supply by impounding two streams about three miles east of the city. Construction of the dam and pipe line and a filtration and treatment plant has been completed, but on account of low rainfall the plant has not yet been placed in use. The well system and pumping plant now in use are paid for, and the water and light revenues carry all expenses of the lake bond issue. A CCC camp is at work improving the 1,300-acre lake property.

The combined net incomes of the Water and Light Departments represent the amounts used either for current expenses or for reduction of indebtedness. The last general fund tax levy was in 1925. In that year the utilities netted $150,998. The incomes for the next two years, 1926-27, were $171,008 and $255,004 respectively. For the fiscal year to June 30, 1936, the combined net incomes totaled $267,110, divided as follows: water, $58,979; electric energy, $208,131. An Addressograph is used for mailing bills.

Water and Light Pay

The only city revenues from sources other than public utilities are miscellaneous fees, licenses and fines, which altogether do not constitute 5 per cent of the total. Some street-repair work is paid for from the maintenance funds included in special assessments, and recently local improvements have been undertaken with purely voluntary agreements for cash contributions from property owners. All other expenditures, including the cost of garbage and refuse collection, are paid for by transfers of surplus from the Water and Light Departments to the general fund.

In recent years the annual budget has included from $20,000 to $35,000 for "made work," which has been used not only for purely city work, but also for sponsor's contribution to Federal-relief projects. All such projects to which the city has contributed have been planned and supervised by the City Engineer. From this source a total of $75,000 of Federal funds has been drawn for the execution of needed improvements. In addition, the PWA made a grant of approximately $115,000 to the lake project, and about $20,000 to the cost of the new library building completed in 1935. These funds could not have been secured if the city's financial condition had not enabled it to hold up its own end.

The city's present properties are conservatively appraised at $2,636,000, against which the total indebtedness amounts to less than 26 per cent. While water and light rates have been adjusted purely to meet local conditions, they are not out of line with those of private utilities in similar communities, and the rapid growth of consumption indicates the public's opinion of them. They could be set to the same brackets as the rates of the Oklahoma Gas and Electric Co. for corresponding cities, with little or no change in revenue. The average rates per kilowatt-hour for residential service are 7.8 cents for 25 kwh and 5.4 cents for 100 kwh. Rural electric lines extending five to six miles outside the city limits have been erected under special agreements usually involving deposits to cover the cost of the lines, to be paid back out of revenue from them.

Two Years of Water, Light and Power at Warren, Minnesota

TOTAL income for electricity and water for two years ending March 1, 1936, was $56,095. Of this, $41,461 was for energy at an average rate of a trifle over 7 cents. During the two years 1930-32, the average rate was nearly 10 cents, and revenue was $18,661. Here is a 30 per cent decrease in electric rates, with only a 15 per cent decrease in gross income—and a 19 per cent increase in consumption.

The earnings of the plant have paid the usual operating expenses, including $2,353 insurance and $5,343 depreciation plus cash payments for the following capital purposes.

Payment on new unit	$9,971
New well, pump-house, pump	3,960
Transmission line	2,072
Water main	1,135
Land	500
Switchboard	500

The electric plant has met every claim made for it at the time of installing diesel power (three Fairbanks-Morse engines). The peak load is 225; installed capacity, 437 kw. In addition to service to pay consumers, the plant furnishes our population of 1,470 with free light for city streets and city hall, free water for sprinkling, skating and fire protection.

Municipal Refuse Incinerator Used for Production of Power

Providence, R. I., Places 160-Ton Plant in Service as a Public Utility

THE city of Providence, the capitol of the state of Rhode Island, with a population of 255,000, recently placed in service a new refuse incinerator and power-production plant adjacent to its sewage-treatment plant. The new incinerator is designed for a three-fold purpose: first, to provide a sanitary and efficient means of disposing of all the city's garbage and rubbish; second, to furnish power 24 hours per day, 365 days per year, for the adjacent activated sludge-treatment plant; and, third to furnish power for the total requirements of the sewage pumping station when the motorization program at this station is completed.

Originally all the garbage collected in the city of Providence was sent to the hog farms, and the rubbish was disposed of by dumping. In 1927 the city built an incinerator to dispose of this material. By 1934 this plant was running under a heavy and consistent overload, which resulted in increased maintenance costs and imposed a heavy strain on the equipment and personnel of the plant. The Commissioner of Public Works decided that something should be done to relieve this overload either by supplying additional capacity at the present plant or building a new plant.

After a study by a commission, consisting of the Commissioner and the Health Committee, it was decided to build a new plant and to utilize the products of combustion, from the burning of the refuse in this plant, for the purpose of generating steam and supplying power. As there was a ready use available for this power at the new activated sludge-treatment works, the new incinerator was located on an excellent site adjacent to this plant.

The new plant consists of a five-cell Hiler incinerating furnace having a normal capacity of 160 tons of mixed refuse per 24 hours, with an overload capacity of 200 tons per 24 hours. The refuse, consisting of wrapped garbage and rubbish, is collected by a fleet of city-owned G. M. C. trucks and discharged into a storage pit inside the incinerator building. This pit is 75 feet long by 15 feet wide and 24 feet deep, and provides ample storage capacity to permit charging the incinerator at night, during holidays and over week-ends, at which times there is no municipal collection.

There are four 12-foot openings to the storage pit, each closed with a rolling steel door. A chain is fastened across each opening when the door is up and not in use. The chain is so connected to an electric signal system that if it is taken down a red light shows up over the door on the inside, in line with the crane operator's cab, so that the operator knows that a truck may dump there at any time, and governs himself accordingly.

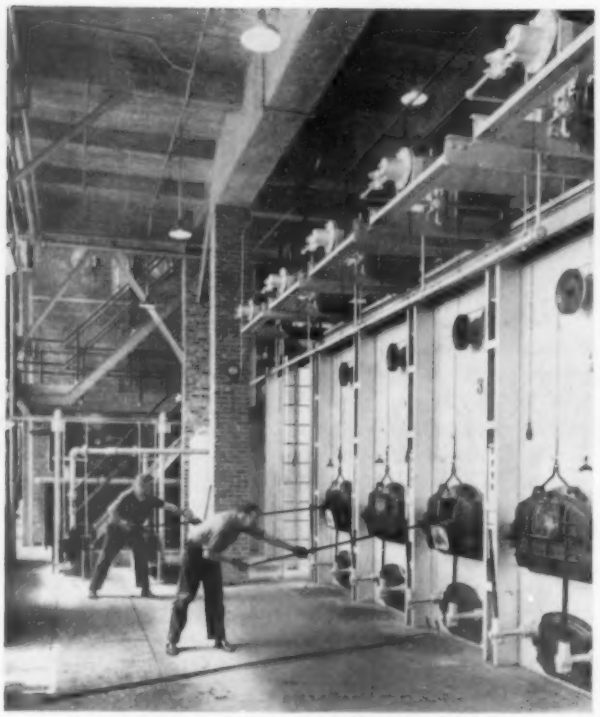
Charging

A 7,000-pound P & H alternating-current crane, equipped with a 1½-cubic-yard Hayward clamshell bucket, handles the wrapped garbage and other refuse from the storage pit to the five charging hoppers. These hoppers are loaded periodically to maintain the proper furnace temperatures. The bottoms of the hoppers are sealed by means of refractory-lined pneumatically operated gates, which are controlled from the stoking floor.

Compressed air for the operation of the gates is fur-

FRONT OF THE NEW WASTE DISPOSAL UTILITIES BUILDING, PROVIDENCE, R. I.

At left, the doorways to the storage pit. The right section of the building is the power plant



THE STOKING FLOOR IN THE INCINERATOR SECTION OF THE NEW REFUSE DISPOSAL AND POWER PLANT AT PROVIDENCE

nished by a pair of Ingersoll-Rand 7 x 5-inch air compressors driven through V-belts by Westinghouse motors. The operating crew on the charging floor consists of two men, who, in addition to controlling the discharge of the refuse from the loading hoppers onto the fires, distribute the materials over the grate area, and, by means of two levers for each of the five cells, dump the residue from the cells through counterweighted grates into the ash hoppers. The effective dumping area is about 75 per cent of the total grate area. Tests show that the residue from the materials incinerated is from 6 to 8 per cent by weight and entirely free from organic matter.

The air for combustion is supplied by a turbine-driven forced-draft fan and preheater to a temperature ranging from 350 to 400 degrees F. before being delivered to the underside of the grates through manually operated dampers, which are controlled by the stokers from the front of the furnace. The roof of the furnace and combustion chamber is composed of a suspended type Detrick arch. This type of arch is also used in the flues.

Ash Handling

Each furnace cell has an individual brick-lined ash hopper into which the residue is discharged. The combustion chamber is equipped with two hoppers for the collection of fly ash. All these hoppers discharge the ash into a trough with a 6-inch water seal which prevents the escape of dust, steam or odors. A scraper conveyor runs through the trough and up a sloping wedge wire screen, to permit draining of the ash, and delivers the dewatered material into a cross conveyor, and thence into an outside hopper measuring 12 x 10 feet in plan and 14 feet high. This hopper is equipped with two counterbalanced dumping grates for the delivery of the ash to the trucks.

Combustion

The products of combustion are taken from the combustion chamber to a cross flue for delivery to either of two Babcock & Wilcox waste heat boilers. The boilers are of the three-steam-drum type with 3½-inch tubes and have a rating of 670 boiler horsepower each. A constant steam pressure from 180 to 190 pounds is maintained in the boilers, with safety valves set to blow at 195 pounds. A pair of Terry steam turbines furnished by the Warren Steam Pump Co. drive the automatically controlled boiler steam pumps, which can deliver preheated water of a temperature from 215 to 218 degrees F., at the rate of 100 gallons per minute against 250 pounds boiler pressure. An Elliott de-aerating make-up feed water heater takes city water through a float control valve for delivery to the boiler feed pumps. Each boiler is equipped with a complete auxiliary oil-burning unit for use in case of emergency. Feed pressure for the fuel oil is furnished by two Worthington reciprocating pumps. After leaving the boiler, the waste gases are delivered through an induced-draft fan to either of two steel stacks 6 feet in diameter and 120 feet high.

Instrument Panel Board

An instrument panel board is provided on the boiler room floor equipped with the following instruments:

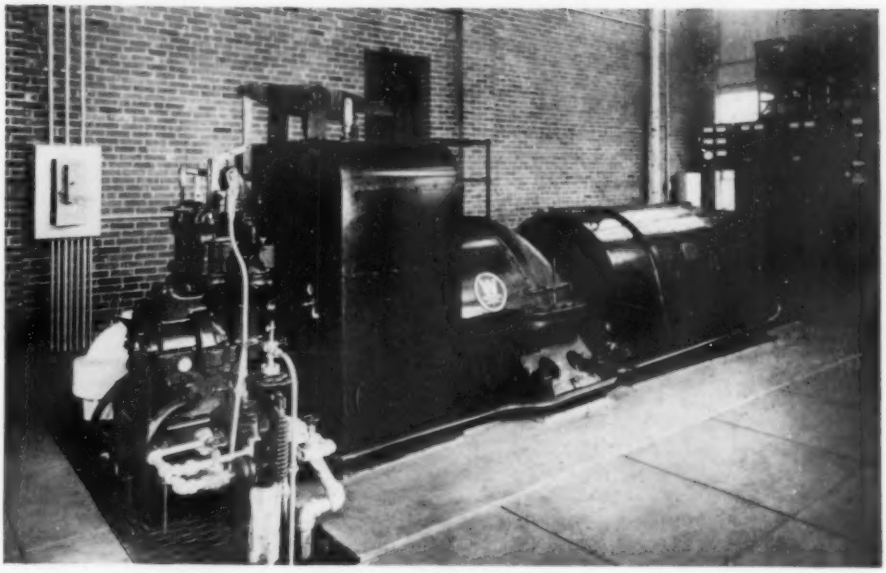
An Ellison 3-pointer draft gage indicating the forced draft over the bridge wall, the draft at the entrance to the boiler, and the draft at the preheater outlet. A Chronoflow telemeter records the total steam flow. A Brown Instrument Co. recording pressure gage shows the boiler pressure throughout the 24-hour cycle in the No. 1 and No. 2 boilers. A Brown 5-point pyrometer shows steam temperature in boilers No. 1 and No. 2. The temperature of the flue gas from these two boilers before it reaches the preheater and the temperature in the combustion chamber average 2,000 degrees F. and range from 1,850 to 2,200 degrees F.

Steam from the waste heat boilers is converted into electric current by two steam-turbine-driven alternating-current generator sets. Each set consists of a 1,250-kw (at 80 per cent power factor) Westinghouse generator, 2,400-volt, 375-ampere, 3-phase, 60-cycle. Each generator is provided with field discharge resistor, a hand-operated field rheostat, resistance type temperature detectors, a direct-connected 14-kw, 125-volt shunt-wound exciter, with hand-operated field rheostat and a 340-square-foot generator air cooler designed for operation with cooling water at 75 degrees F.

Each turbo-generating set is provided with a 1,550-square-foot surface condenser of the two-pass radial flow type, with Muntz metal tube sheets and Muntz metal tubes. The effluent from the sewage-treatment plant is used as the cooling water for the condensers.

Each turbo generator is mounted separately from the floor. A complete switchboard of the cubical steel-enclosed type, with an automatic voltage regulator, is furnished in the turbo-generating room.

The principal features that strike a visitor to the new incinerator plant are the entire absence of smoke, odor or dust that is usually associated with such a plant, the good lighting, natural as well as artificial, the roominess of the



THE WESTINGHOUSE TURBINE DRIVING A 1,250-KW GENERATOR AT THE NEW INCINERATOR

plant, which provides ample space for the operators to move around, and the efficient ventilation.

The new plant is operated under the direction of Charles A. Maguire, Commissioner of Public Works, with John E. Henry, Jr., Superintendent. The entire incinerator and power-generating plant was designed, built, and guaranteed as to results by the Hiler Engineering & Construction Co., Inc., of Pittsburgh, Pa., from preliminary studies made by Philip J. Holton, Jr., Superintendent of the Scituate Reservoir Division of the city of Providence.

Regulating Density of Population

By EDWARD M. BASSETT

ALTHOUGH the segregation of dwellings according to the number of families is recognized by the courts as lawful, yet this segregation does not necessarily have any relation to density of population. Some multi-family houses are smaller than some one-family houses. The number of families does not measure the size of the building, and therefore does not necessarily measure the density of population. In states where the enabling act authorizes zoning for density of population, the practice has increased of providing a density regulation for each district and especially for each residential district.[1] This may be done by stating the allowable number of families per acre of land. No prospect of trouble arises in reducing the allowable number to three or four families per acre. It is not difficult to show the court that such a regulation has a substantial relation to fire risk, light and sunlight, circulation of air, annoyance from noise, and danger of contagion. The substantial relation ceases, however, when unnecessarily large building plots are required. The question sometimes arises whether these density regulations can be used to preserve the surrounding of large estates by preventing the building of nearby houses on comparatively small lots. For instance, a regulation requiring two acres for each family might be a protection to surrounding large estates, but in case of a lawsuit could the municipality show that a house for one family on two acres of land contributed to the safety and health of the community to a greater degree than such a house on one acre of land? Three families to the acre is safe. Beyond that is doubtful. Some point still beyond that is unlawful for the reason that there is no substantial relation between the regulation and the health and safety of the community.

Instead of limiting the number of families per acre, there may be a requirement as to the number of square feet of lot per family. Both methods are controlled by the same legal principles. A specified minimum number of square feet of floor space per family is lawful where there is a density authorization in the state enabling act. Similarly, a minimum number of lineal feet of street frontage per family may be lawfully established.

It is true that families may vary greatly in size, but no better way has been found of regulating density of population than by limiting the number of families occupying a given area. It is a practical method of attaining the object desired and has the added advantage of requiring construction features, such as cooking, or laundry equipment, which show the examiner of the plans the use and density intended.

It is important, however, that the ordinance contain a definition of a family, otherwise the court will stand by the dictionary definition, which is unsatisfactory for this purpose.[2] The substance of the definition should be that the word means two or more people living together as a single housekeeping unit and using one cooking outfit only.

[1] ILLINOIS.—*Bjork v. Safford*, 333 Ill. 355, 164 N. E. 699 (1929).
NEW JERSEY.—*Nelson Bldg. Co. v. Greene*, 5 N. J. Misc. 331, 136 A. 503 (1927).
NEW YORK.—*Barker v. Switzer*, 209 App. Div. 151, 205 N. Y. S. 108 (1924).
MacEwen v. City of New Rochelle, 149 Misc. 251, 267 N. Y. S. 35 (1933).
RHODE ISLAND.—*City of Providence v. Stephens*, 47 R. I. 387, 133 A. 614 (1926).
Richard v. Zoning Board of Review, 47 R. I. 102, 130 A. 802 (1925).

[2] *Village of Riverside v. Reagan*, 270 Ill. A. 355 (1933).

ACKNOWLEDGMENT.—The foregoing item comprises a portion of the chapter on Zoning Districts in Mr. Bassett's new book, "Zoning: The Laws, Administration and Court Decisions During the First Twenty Years," published by the Russell Sage Foundation and reviewed in THE AMERICAN CITY for December, 1936.

Trailer Safety and Sanitation

TRAILERS come and go, but whether on the road or resting in a tourist camp, they are a growing cause of concern among city officials. Trailers of all sizes and shapes and conditions bring up the problem of safety on the road. Camps are equally heterogeneous in their appearance and equipment and are becoming a source of worry to the health departments.

Lou Wallace, former President of the American Association of Motor Vehicle Administrators, and Sidney J. Williams, of the National Safety Council, have given some timely warnings on the matter of trailer safety. Up to the present time there have been no uniform regulations as to the length, width, weight, lighting, rear-view mirrors, brakes, coupling, and sanitary equipment of trailers. Many trailers, especially the home-made variety, have already proved exceedingly hazardous travelers, swaying from side to side, incapable of stopping short, and very poorly lighted. States have not yet passed legislation, owing to the newness of this hazard, but tax and regulatory measures are being prepared for January sessions. It is long since time for the manufacturers and the motor vehicle administrators to cooperate in the formulation of reasonable uniform regulations. Without country-wide uniform regulations, trailers will meet different standards every time they cross a state line, and the joys of free travel will be by no means unconfined.

Aside from the regulation of physical equipment, the safety of the trailer depends to a very great extent upon care in driving. Driving with a trailer means that one must allow more clearance when turning corners, passing traffic, and entering and leaving gas stations; brakes must be applied sooner, and various other special precautions must be taken. The National Safety Council feels that in addition to making the trailer coaches as fool-proof as possible, the manufacturers should feel obliged to join in an effort for general public education of drivers. It would be well if trailer magazines carried safety material, and if a uniform safety booklet were prepared to be distributed with all trailers sold.

The problem of sanitation is more directly connected with trailer camps, although the trailers themselves must possess certain sanitary equipment. In the camps we find the problems of comfort stations, washing facilities, and garbage disposal. One large state health department has already attributed a recent increase in typhoid rates to trailer camps.

Regulatory ordinances have been enacted by Oakland, Calif. (shown on this page), and Miami, Fla. The Miami ordinance, adopted on November 18, 1936, requires permits for camps or parks to be obtained from the Department of Public Health upon the Department's approval of the plan for the park. There are many detailed regulations: each trailer site must be at least 25 feet by 35 feet, and it must be level, free from rocks and weeds, and well-drained; camp sites must be 20 feet from the street and 5 feet from any adjoining property; roadways for entrance and exit must be hard-surfaced and 18 feet in width; each camp or park accommodating three or more tourists shall provide toilets, urinals, wash-basins, slop-basins, showers or baths, and water faucets in specified numbers and according to specified sanitary regulations; and regular cleaning and inspection of buildings, water and sanitary conveniences must be provided for. In addition, records must be kept of all persons accommodated at the camps. Miami makes trailerites welcome for as long as they wish to stay, whereas several other cities, such as Lincoln, Nebr., Palo Alto, Calif., and Eugene, Ore., have prohibited trailer camps and cars within the city limits. In some cities trailers are tolerated for short stays only in specified sections.

The trailer camp ordinance adopted by Oakland, Calif., on September 24, 1936, is given here in full:

AN ORDINANCE REPEALING ARTICLE 6 OF CHAPTER 4 OF THE OAKLAND MUNICIPAL CODE, AND ADOPTING IN LIEU THEREOF A NEW ARTICLE 6, REGULATING THE ESTABLISHING AND MAINTAINING OF TOURIST CAMPS.

BE IT ORDAINED by the Council of the City of Oakland as follows:

SECTION 1. Article 6 of Chapter 4 of the Oakland Municipal Code, entitled "Camps," is hereby repealed in its entirety, and a new Article 6 of Chapter 4 of said Oakland Municipal Code is hereby adopted, which article shall be entitled "Tourist Camps" and shall contain sections numbered, entitled and providing as hereinafter set forth:

ARTICLE 6—TOURIST CAMPS

SEC. 4-6.01 DEFINITIONS. For the purposes of this article, certain words and phrases are defined, and certain provisions shall be construed, as herein set out, unless it shall be apparent from their context that a different meaning is intended

SEC. 4-6.01 (a) TOURIST CAMP DEFINED. A "tourist camp" is any place where two or more camp cottages are located, or any premises designed or intended for the purpose of supplying to the public a location for a camp cottage.

SEC. 4-6.01 (b) CAMP COTTAGE DEFINED. A "camp cottage" shall include, in addition to camp cottages as they are commonly known, tents, tent houses, house cars, camp cars, and trailers, used for, or adaptable to use for, living quarters.

SEC. 4-6.01 (c) UNIT DEFINED. A "unit" is a section of ground in any tourist camp used, or designed for use, as a location for a single camp cottage.

SEC. 4-6.02 TOURIST CAMP—PERMIT. It shall be unlawful for any person to establish or maintain, or to permit to be established or maintained upon any property owned or controlled by him, a tourist camp in the City of Oakland, unless there exists a valid permit therefor granted and existing in compliance with the provisions of Article 2 of Chapter 5 of this Code. The application for such permit, in addition to the requirements specified in Section 5-2.02 of this Code, shall be accompanied by plans of the proposed tourist camp, showing the location of all buildings, driveways, toilet facilities, showers, laundry facilities, slop sinks, hydrants and other improvements. Public notice shall be given as provided in Section 5-2.04 of this Code, and the investigating officials referred to in Section 5-2.03, to whom the application shall be referred, shall be the Health Officer, Fire Marshal, Building Inspector and City Planning Investigator.

A permit fee of $1.00 per unit shall be charged before any such permit shall be issued, and a renewal fee shall be paid each year during the existence of such permit, and in the said amount of $1.00 per unit maintained within the tourist camp.

SEC. 4-6.03 CAMP COTTAGES RESTRICTED TO TOURIST CAMPS—UNIT AREA. It shall be unlawful to locate or use as living or sleeping quarters any camp cottage on any premises other than those contained within a tourist camp duly permitted and maintained pursuant to the provisions of this article, or to permit the same to be done on any premises.

No unit shall contain less than 600 square feet in area, and no unit shall be permitted to accommodate more than one (1) camp cottage.

The provisions of this section shall not, however, be construed to prohibit the use of the premises adjacent to any residence for the accommodation of not to exceed one (1) camp cottage occupied by non-paying guests of the persons residing on the premises adjacent thereto.

SEC. 4-6.04. RECORD OF GUESTS. Every tourist camp shall maintain a manager in charge thereof. Such manager shall require all tourists or other persons using such tourist camp to register in a book kept for that purpose. He shall also keep a record of the name, address and car license number of each occupant of such tourist camp, which record shall at all times be open to inspection by the Police Department.

SEC. 4-6.05 LIMITATION ON RESIDENCE. It shall be unlawful for any person, except the manager and his bona fide employees, to remain or live in any tourist camp for more than ninety (90) days in any six-month period, and it shall be unlawful for any tourist camp permittee or his agent to permit any person to remain in the tourist camp under the control of such permittee or his agent longer than the period herein allowed.

SEC. 4-6.06 PLUMBING AND SANITARY REQUIREMENTS. Every tourist camp maintaining permanent structures for living quarters shall provide each unit so improved with at least one (1) toilet, one (1) bath tub or shower, one (1) wash basin and one (1) kitchen sink.

All tourist camp units which are not improved with permenent structures for living quarters shall be provided with a minimum, for each sex, of one (1) toilet and one (1) bath tub or shower for every five (5) units or fraction thereof. In addition thereto, there shall be provided one (1) urinal for every five (5) units. Such toilets and urinals shall not be more than 200 feet from the unit served by them. A two-compartment laundry tub, a slop sink, and a wash basin, with running water, shall be provided for every eight (8) units or fraction thereof.

All plumbing work shall be in compliance with Chapter 8 of this Code. No dry or chemical closets shall be installed or used within the City of Oakland, and all such closets shall be sealed while inside the city limits. A sufficient number of tightly covered metal garbage cans shall be provided in all tourist camps.

SEC. 4-6.07 SANITATION GENERALLY. Every tourist camp and all structures therein shall be constructed and maintained at all times in a thoroughly sanitary condition.

SEC. 4-6.08 ELECTRICAL REQUIREMENTS. All electric wiring and distributing systems in tourist camps shall be in accordance with Chapter 9 of this Code, and the rules and regulations made pursuant thereto; and wherever, in the opinion of the Superintendent of the Electrical Department, it shall be deemed to be to the interests of public safety and welfare, all or any part of any electric distributing system may be by him required to be placed underground.

SEC. 4-6.09 LIGHTS. Every tourist camp shall be provided with adequate means of lighting the same at night, and all toilets and baths shall be provided with lights which shall be kept lighted from one-half hour after sunset until one-half hour before sunrise.

SEC. 4-6.10 STOVES, FUEL AND FIRE EXTINGUISHERS. All stoves and fuel used in any tourist camp for cooking or heating purposes shall be of a type approved by the Fire Marshal. There shall at all times be maintained in every tourist camp at least one (1) approved fire extinguisher for every five (5) units.

SEC. 4-6.11 KITCHENS. Every tourist camp not equipped with individual kitchens or kitchen facilities for each unit shall be provided with an adequate community kitchen approved by the Health Officer.

SEC. 4-6.12 GENERAL PLAN. Every tourist camp shall be bordered around the boundary lines by an ornamental tight fence, or closely grown hedges, not under six feet (6') in height, as approved by the Building Inspector. No gate opening shall be constructed in the fence adjoining any property without the written permission of the owner of said property. All the units shall be grouped in blocks abutting driveways or courts of not less than twenty feet (20') in width, giving easy access to all units. No camp cottage shall be located within five feet (5') of the unit side-line, nor within twenty feet (20') of a city street.

SEC. 4-6.13 RULES AND REGULATIONS. The City Manager shall have the power to promulgate rules and regulations for the enforcement of the provisions of this article, and for the purpose of insuring the maintenance of tourist camps and structures therein in a manner compatible with public health and safety.

SECTION 2. This ordinance shall take effect immediately.

In Council, Oakland, Calif., Sept. 22, 1936. Passed to print for two days by the following vote: Ayes—Councilmen Beach, DePaoli, Fitzsimmons, Jacobsen, Quinn, Shattuck, Slavich, Tutt and President McCracken (9). Noes—None. Absent—None.

W. W. CHAPPELL, City Clerk.

Water Tank a Notable Landmark

Architectural Effect Desired Leads to Choice of Concrete

By J. STANLEY RAFFETY
Hamilton County Sanitary Engineer, Cincinnati, Ohio

A 500,000-gallon capacity elevated tank has recently been completed for the water-supply system of Cincinnati and Hamilton County, Ohio. This is a noteworthy attempt to secure an attractive appearance for what in the past has been too often a purely utilitarian structure.

The decision to build a concrete tank was made after thorough study and comparison of relative costs. In the final bids an alternate was asked for a steel tank embodying the same architectural treatment, and it was found that the basic bid on the concrete tank construction was about 10 per cent lower than the low bid for steel tank construction. The cost of the tank and controls was approximately $45,000, or about 9 cents per gallon of capacity, which compares favorably with the price per gallon of the useful capacity of the other tanks and standpipes in the Cincinnati system. These other tanks have some architectural treatment, but in no case has it been as successful or as well integrated with the tank design as in this new Indian Hill tank.

THE NEW INDIAN HILL WATER TANK IN CINCINNATI, OHIO

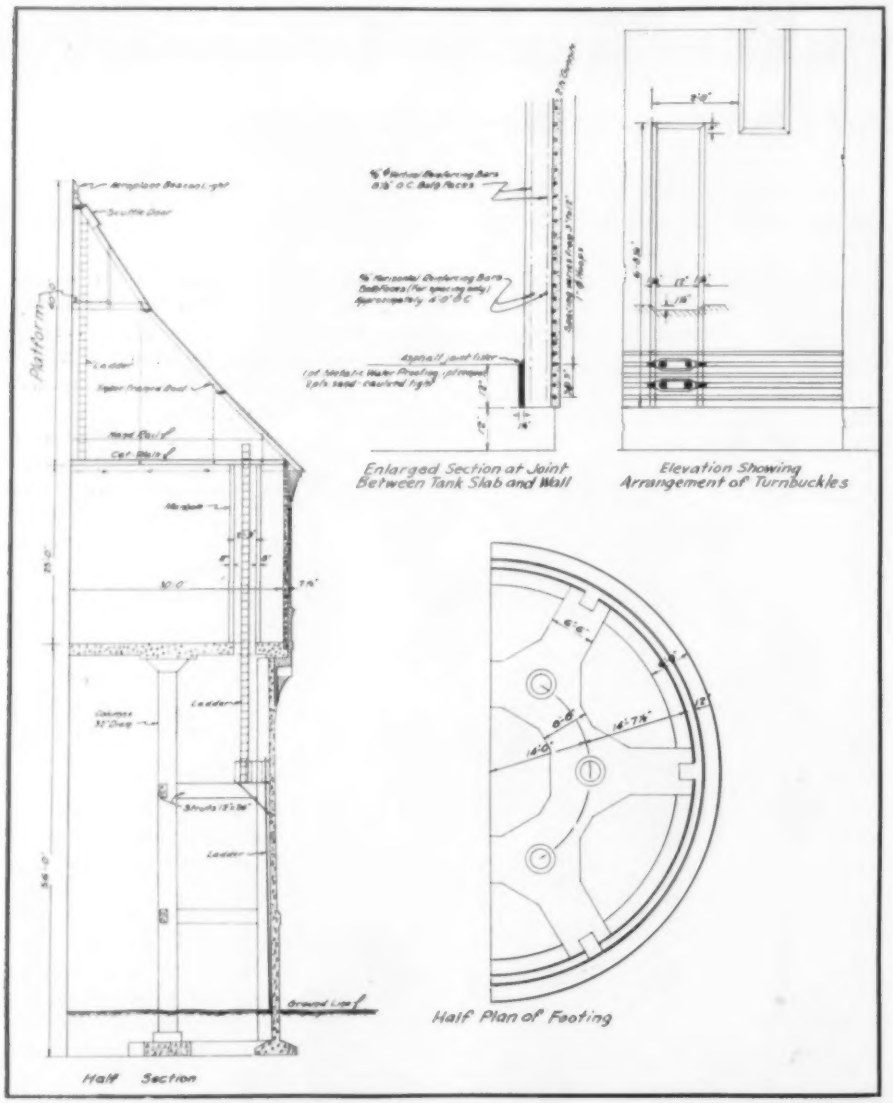
The structure consists of a circular concrete wall approximately 56 feet in diameter and 50 feet high, supporting the tank. The tank proper is likewise of concrete, 62 feet in diameter and about 27 feet high. It is covered on the exterior with brick and stucco and surmounted by a steeply pitched conical roof, covered with hand-split wood shingles. The point of the roof carries an airplane warning light, the apex being 110 feet above the ground. The general appearance is somewhat that of a medieval tower. The combination of materials and such architectural details as the dormers in the roof, the hood over the entrance doors, and the series of brick arches below the cantilevered portion of the tank, not only give a pleasing appearance to the structure but bring it into harmony with the residential neighborhood. The face brick used was fairly rough and irregular and was laid so as to give a weathered appearance. The stucco panels and brick mortar are cream color. The concrete base is rusticated, strips being used in the concrete forms. This rusticated concrete base was given a rubbed finish, while on the shaft the concrete was left with the form marks showing. All exposed concrete work was given a brush coat of white cement with a little buff coloring matter to tone it in with the brick and stucco above.

The maximum head range for the 500,000-gallon tank is 24 feet, the interior diameter being 60 feet. In the design of the supporting structure with its heavy loads the requirement was for absolutely uniform settlement. Unusual care was taken, with the result that the maximum settlement was only ½-inch. One side settled about ¼-inch more than the other, but the variation was so uniform that no cracks have developed. The footing supporting the six central columns and the exterior wall was built as a single unit. It consists of a series of wide, continuous beams so laid out that three beams meet under each column. The load of the tank is divided between the interior columns and the exterior wall. The wall thickness is 7 ½ inches, and the column diameter 32 inches. On account of the height of the structure, two sets of intermediate braces were put in, tieing the columns together and to the wall, so as to give the stiffness effect of 17-foot story heights. The wall columns stop about 6 inches below the bottom of the slab, and consequently carry no load except what is transmitted to them from the wall.

The Tank Floor Slab

The design of the tank floor slab was perhaps the most difficult problem encountered in the design. The outer part of the slab was designed along more or less conventional lines, using two-way reinforcing. The cantilevering of the tank floor over the supporting wall was desirable from the structural standpoint and has been made an asset in the architectural design of the tank.

The inner portion was designed as a flat plate about 28 feet in diameter, supported at six equidistant points around its circumference. This flat plate design was complicated by the effect of the negative moment at the cir-


Platform
Enlarged Section at Joint Between Tank Slab and Wall
Elevation Showing Arrangement of Turnbuckles
Half Plan of Footing
Half Section

HALF SECTION OF TANK AND HALF PLAN OF FOOTING OF THE INDIAN HILL WATER TANK FOR THE CINCINNATI-HAMILTON COUNTY WATER SYSTEM

cumference of the plate, particularly over the supports. It is to be noted that none of the radial bars cross the center of the slab, and that all the tension stress at that point is carried by the circular rings of reinforcement.

The tank walls were constructed in four vertical sections on the seat provided for them, as shown on the drawing, with four vertical construction joints but no horizontal construction joints. The vertical reinforcement consists of $\frac{5}{8}$-inch round bars spaced $8\frac{1}{8}$ inches on center in both faces.

For horizontal reinforcement there are only ten $\frac{5}{8}$-inch round bars, merely for the purpose of holding the vertical bars in place. In lieu of the usual horizontal reinforcement, 55 1-inch round hoops provided with turnbuckles were placed on the outside of the concrete wall after the forms were removed, this being the principle of the Hewett System. The spacing of these hoops is graduated in accordance with the change in pressure; they are 3 inches apart at the bottom and 12 inches apart at the top of the tank. The purpose of the hoops is to pre-stress the concrete wall by tightening the turnbuckles to such an extent that when the tank is filled with water and its diameter is increased by the internal pressure, the concrete will still be in slight compression instead of the tension that would occur with the use of ordinary reinforced construction.

The seat carrying the tank wall was coated with asphalt in order to prevent a bond between the concrete of the tank floor and the wall, for a bond at that point would have interfered with the pre-stressing of the lower portion of the tank wall.

The vertical construction joints were made with no provision for bonding one section to another, and no intention of doing so. Complete dependence for the tightness of this joint was placed on the pressure developed between adjacent sections by the tightening of the bands. After this tightening, the walls and floor were damp-proofed on the inside with metallic waterproofing. Upon test of the tank, the walls and vertical joints proved absolutely tight, but a very slight leakage developed in the joint between walls and floor. This was remedied by covering the floor and the wall joint with bituminous waterproofing. It is our opinion that some other type of joint should be used on future tanks.

Forms and Concreting

The forms were built in fairly large sections approximately 8 feet wide by 16 feet high, and were handled

for placing and rebuilding by a crawler-mounted crane with an extension boom. The concrete for the lower two-thirds of the supporting cylinder (up to 33 feet above the ground) was hoisted and placed by the same equipment. This eliminated the necessity of using wheelbarrows or concrete buggies, except for the interior columns. A commercial material hoist was used for the rest of the concrete, the brick and other materials for the upper part of the supporting cylinder and the tank itself.

One of the interesting problems was brought about by the requirement that 26 feet high segments of the tank walls be poured without a horizontal construction joint. It was considered impractical to attempt to spade the first concrete into these forms from the top of the wall, and therefore the upper half of the outside forms, after having been carefully fitted, was removed and the concrete for the lower half of the wall was poured and spaded from an intermediate scaffold. It was then necessary to replace the top half of the form and secure it in place within a period of not more than two hours, and to keep adding a little fresh concrete throughout this period in order to eliminate a horizontal construction joint, which was forbidden by the specifications. Excellent concrete work was secured by the use of a vibrator in connection with the hand spading of all concrete placed above the footings.

"Ready-mixed concrete," mixed in accordance with a rigid material- and proportioning-specification and a secondary-strength specification, was used throughout the work. Special attention was paid to the design of the concrete mix on account of the thin wall sections and a requirement for density set up by the very purpose of the structure. Watertightness was the first consideration.

The adjustment of the tank bands to the proper tension was accomplished by the use of wrenches designed so that a pull of 170 pounds (the weight of an average man) on the handle would produce the proper tension in the rods.

This new concrete tank was designed by Charles F. Cellarius, of Cincinnati, Ohio, and was constructed under the supervision of the author, with Fred. W. Morrill as Structural Engineer. The structural system under which the tank was designed is that of the Hewett System patent for pre-stressed tank walls. Reno F. Runck was contractor for this work. Albert S. Hibbs is Superintendent of the Cincinnati water works.

Problems in Street Maintenance and Snow Removal

By E. F. MARTIN
Town Engineer, Montclair, N. J.

TWO of the most serious problems faced by city engineers in the northern part of the United States are street maintenance and snow removal. While I realize that during the past few years it has been essential to curtail expenditures in all governmental agencies, as well as in private industry, nevertheless there is no way to prevent the deterioration of pavements unless sufficient funds are available for that purpose.

To reduce an appropriation which already is not sufficient to maintain streets, is false economy and proves costly in later years.

May I state most emphatically that officials who are elected by the people to govern their respective municipalities must have the courage and foresight to provide ample funds for continuing adequate programs of street maintenance.

Now why? Sometimes during the administration of a governing body, but perhaps through no negligence of their own, they are forced to appropriate additional funds, which in turn create a greater bonded indebtedness; whereas, if all governing bodies in the past had allocated sufficient funds, this would not have been necessary.

Montclair offers an excellent example of courage on the part of elected officials in tackling the problem of providing adequate street-maintenance funds. Previous to 1932, ample funds were available for street maintenance in Montclair, but in 1932 to 1934 inclusive, less than 25 per cent was appropriated, with only a slight increase in 1935 and 1936. What was the solution? When the new Board of Commissioners was elected in May, 1936, the Director of the Department of Public Works found that the streets were in urgent need of repairs, and that the street budget was only one-third of what it had been in former years. He immediately set up an appropriation equal to that of former years, and the Board of Commissioners appropriated about $45,000 additional, which was bonded. This Board realizes its responsibilities and is using sound judgment in discharging the duties which were entrusted to it.

I believe that ample funds must be provided for the removal of snow. To provide inadequate funds in the budget at the beginning of the year and to make emergency appropriations, one after another, is likewise false economy, because these emergency appropriations must be placed in the budget of the following year, which in turn, increases the tax rate for that year.

High Point Will Build a $6,000,000 Hydro

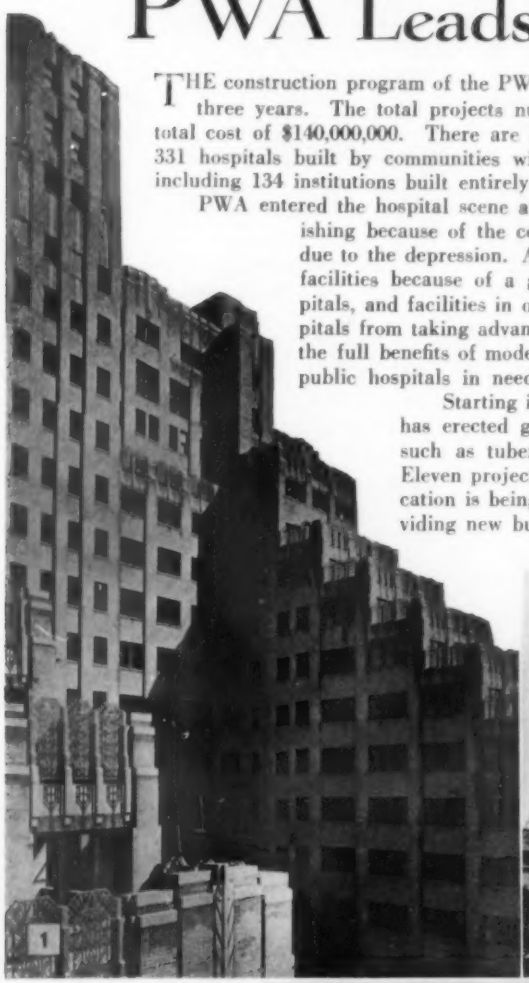
HIGH POINT, N. C., has been allotted a grant, only, of $2,595,000 toward a 6-million-dollar hydroelectric power project, involving damming the fast-flowing Yadkin River in the Blue Ridge Mountains 12 miles from Winston-Salem. High Point now owns its distribution system. The new project consists of an earth dam 84 feet high with a 500-foot spillway, and a concrete power house 200 x 40 x 50 feet housing six direct-connected vertical hydroelectric units, with generators rated 4,150 kw at 200 rpm. Average head is 63 feet.

PWA Leads in Hospital Building

THE construction program of the PWA has included over two-thirds of all hospitals built during the past three years. The total projects number 465, accommodations for 50,000 patients being provided, at a total cost of $140,000,000. There are two avenues of activity, one designated as non-Federal and including 331 hospitals built by communities with Federal loans and grants, and the other designated as Federal and including 134 institutions built entirely through the Federal Government.

PWA entered the hospital scene at a time when the number of private institutions was steadily diminishing because of the consolidation programs in large cities and because of financial distress due to the depression. At the same time, there was an increasing demand for public hospital facilities because of a growing class of indigent sick. Many communities were without hospitals, and facilities in others were inadequate. In still others, lack of funds prevented hospitals from taking advantage of recent improvements in equipment, and thus denied patients the full benefits of modern treatment. In a few cities, almost medieval conditions existed in public hospitals in need of rehabilitation or replacement.

Starting in communities where the need for equipment appeared greatest, PWA has erected general hospitals and clinics and hospitals for specialized treatment, such as tuberculosis sanitaria, leprosaria, and homes for the insane and aged. Eleven projects are new infirmaries for schools and colleges, and even medical education is being aided by the construction of buildings sorely needed. Besides providing new buildings, PWA has been of great assistance in renovating the old.



1. PWA's new $7,500,000 Medical Center in Jersey City

2. Robert Packer Hospital, Sayre, Pa.

3. Addition to Tuberculosis Hospital at Roneys Point, W. Va.

4. Typical PWA Hospital, Madera, Calif.

City Advertises Its Water Supply with an Illuminated Aerator

Waukesha, Wis., Publicizes Its New Well on Main Highways, and Gathers Crowds

A CITY proud of its internationally famed industries, such as White Rock water and Waukesha Motors, has sought to publicize its own water supply by means of an attractive electric fountain. At least, that is what the new aerator in Waukesha appears to be, to the casual observer.

Two wells have served the city for many years, but a third seemed necessary to take care of the increased demands for water in the city. The new location is on North Street, which leads to U. S. 16, and at the junction with the Milwaukee-Madison Road, which is traveled by thousands of vehicles daily. This well was drilled early in 1935 to a depth of 1,903 feet, with a 16-inch top casing and a 12-inch bottom casing, with the casing carried to a depth of 401 feet. It produces 1,100 gpm continuously, which is delivered direct to the aerator through an 8-inch riser pipe. It is pumped with an American deep-well turbine driven by a 100-hp slip ring G. E. electric motor.

The aerator is primarily for advertising purposes, but it has its useful side in that it reduces the iron content of the water by about 0.15 ppm, leaving from 0.1 to 0.2 ppm in the water. The aerator is encased in a large glass dome which dominates the landscape, particularly at night when colored lights play on the cascading water. The framework of the dome is aluminum and is 27 feet inside diameter from wall to wall of the octagonal structure. The plate-glass sides are 16 feet high, with a cupola of $\frac{3}{8}$-inch corrugated wire glass. The side glass is $\frac{1}{4}$-inch thick.

The water from the riser pipe falls through an octagonal fine-mesh copper screen, which spreads the water over the corrugated glass cascade. A fine mesh copper screen, placed over the cascade, checks the splashing of the water onto the plate-glass sides, which would obscure the view. This has been very effective. About 10 feet below the glass cascade and just below the limestone base of the structure is a double ring of sheet metal containing twelve colored lights, red, green and amber, furnished by the General Electric Co. These are supplemented by a set above the aerator, and a G-E selective flasher changes the combinations of lights constantly, furnishing an attractive display of a useful electric fountain. There are twelve different combinations of lights with 13,500 watts of illumination.

The water falls into a pool below, which is 23 feet deep and which connects with the storage reservoir just to the south of the aerator. A pair of float controls operate the well pump and the high-service pump in the nearby pumping station. This storage reservoir has a capacity of 300,000 gallons and is completely surrounded by a 14-inch decorative wall of limestone laid up dry. In a recess in the south end of the reservoir is a drinking fountain and a pair of W's set in the wall by using stained stone. The top of the reservoir is shielded from view below by a parapet wall, but the 2½-foot soil covering planted to grass and later to be landscaped with low shrubs is readily seen from the west side, where the street is higher.

THE NORTH STREET PUMPING STATION, ILLUMINATED AERATOR AND RESERVOIR, WAUKESHA, WIS.

A. E. KURANZ, SUPERINTENDENT OF WATER WORKS AT WAUKESHA, WIS.; AND A SECTION OF THE DRY LAID WALL AND THE PUBLIC DRINKING FOUNTAIN

Just north of the attractive limestone well pump house, reservoir and aerator is an old high-pressure pumping station that at present does not harmonize with the newer structures. Plans are already complete for the altering of the pump station and covering it with a 4-inch stone veneer, pointed because of its thinness. The pumping station contains a Fairbanks-Morse 4-cylinder, 240-hp diesel engine, which furnishes power for the deep-well pump, and the high-life pump at this station, as well as the current for the illumination of the aerator at night. Two 15,000-gallon fuel-oil tanks are located outside the north wall of the pumping station. The high-lift pumping from this well is handled with an American 1,100-gpm pump working against a 180-foot head and delivering to the two reservoirs located on high ground to the west of the well. A standby high-service pump of the same size and make is operated by a Waukesha 6-cylinder, 150-hp motor. This pump was placed in operation for a considerable period during the excessive heat of early July, 1936, because of the increased demand for water.

The reservoirs to which this and the two other wells deliver water have a combined capacity of nearly 1,000,000 gallons. There is a Hewitt reinforced concrete tank of 676,000 gallons capacity, built in 1934, and next to it an old wrought iron tank built in 1887 and having a capacity of 300,000 gallons. Plans are now under way to increase the size of the old tank if wrought iron structural parts can be secured.

The two older wells, which still serve the city, are the Baxter Street well, which was originally 1,282 feet deep and delivered 250-gpm. This was deepened to 1,783 feet in 1932, and now delivers 1,080 gpm for 16 to 17 hours daily. It has a 16-inch top and a 12-inch casing, and is cased for a distance of 360 feet with a 12-inch casing. It is pumped with an American deep-well turbine with a 100-hp G. E. squirrel-cage electric motor. The building enclosing the well and the 225,000-gallon storage reservoir and the high-lift pump at Baxter Street is of concrete with yellow stucco and looks to the passerby like a California bungalow. It is located in a residential district.

The Moreland Avenue well was drilled in 1929 to a depth of 1,630 feet and produces 800 gpm when pumped 15 to 16 hours a day. It has a 16-inch top casing and a 12-inch bottom casing, and is cased for a distance of 512 feet. It is pumped with a Layne-Northwest deep-well pump driven by a 100-hp Westinghouse squirrel-cage electric motor. The housing for this station is of reinforced concrete construction with white stucco, and has the architectural characteristics of a small church.

The work described in this article in improving the water supply of Waukesha, and the decorative work in the aerator, which attracts visitors every night, even to double parking along the main thoroughfare, was paid for entirely from Water Department funds, which are separate from the general funds of the city. The projected improvement to the architecture of the North Street pumping station, which will cost about $10,000, will also be paid for from Water Department funds. No work has been started until the money was in the bank and definitely allocated to the work to be undertaken. A. E. Kuranz is Superintendent of Water Works in Waukesha and is responsible for the recent improvements to the system.

Legislation Needed for Local Public Housing

IN states still lacking legislation for the establishment of local housing authorities and for cooperation between housing authorities and municipalities, aid in drafting such legislation and in submitting it to the governors is available from the Public Works Administration in Washington. Speaking at the annual meeting of the National Association of Housing Officials, in Philadelphia on December 4, Edward H. Foley, Jr., Director of the Legal Division, offered the cooperation of the PWA in these matters, and submitted for consideration the following program of action for states which desire to participate in the low-rent housing movement:

1. In those states where housing authority and housing cooperation legislation has not been enacted, such laws should be passed this winter; where changes are necessary in existing legislation, the necessary amendments should be adopted.

2. In those states where there is a law providing for the creation of local housing authorities, such authorities should be created at once.

3. Housing authorities, when created, should immediately undertake surveys of housing conditions in their communities to ascertain the nature and extent of the need for low-rent housing projects, and funds should be provided for this work.

4. Where it is necessary to test in the courts the validity of the housing authorities law, or proposed action under such a law or under a housing cooperation law, test suits should be brought at the earliest possible moment. The quick settlement of doubtful legal questions will aid the marketability of bonds of housing authorities and will avoid legal grounds of attack by self-seeking hostile interests.

Low-Cost Street Resurfacing

By CHARLES R. MATHER
City Engineer, Seymour, Indiana

RESURFACING city streets with bituminous mixed-in-place construction in Seymour is paid for, under the Barrett Law of Indiana, by the abutting property owners, and at unit prices, as specified per square yard. Any extra work required is paid for in proportion.

The old roadway is graded to a predetermined depth, and care is taken that there shall be no low places. By the use of a planer or drag, the roadway is then leveled. Where a considerable mat of mud or earth exists, it is removed and replaced with suitable material, which is built up to a true crown and grade. The roadway along the gutter, for at least 18 inches toward the center, is graded carefully by means of hand shovels, to assure a good shoulder.

The Prime and Added Gravel

After the roadway is leveled, rolled and thoroughly dry, a bituminous prime coat is applied by means of a pressure distributor in the amount of 0.35-gallon per square yard. When the prime has penetrated sufficiently to insure no pick-up, a layer of gravel, thoroughly clean and free from slate and shells, and containing not more than 2 per cent of mud or clay balls, is distributed to a uniform depth the entire width of the street. Three-inch strips are laid lengthwise of the street as a gage for the depth of the aggregate. After the aggregate has been spread, unless it presents a uniform, even surface it is leveled by hand or drag.

When aggregate is spread it must have a uniform distribution of sizes throughout the entire course. Patches, or areas of fine or undersized material, are removed and replaced with suitable aggregate. Emphasis is laid upon the proper spreading of the gravel. The specifications for the size of the gravel require that not over 85 per cent shall pass a 1-inch sieve, and not more than 2 per cent shall pass a No. 4 sieve.

Before application of the bituminous material, aggregate within 1½ or 2 feet of the gutter is moved toward the center of the street to insure its being fully coated.

Applying the Bitumen

Bituminous materials meeting the Indiana state specifications are used. Without disturbing the aggregate, bituminous material RC-2, a rapid curing cutback asphalt, is uniformly applied to the surface in the amount of 0.7-gallon per square yard. After this first application, the aggregate is bladed by means of a power-driven grader, or any self-propelled type of equipment used in bituminous road-mix work, until the entire surface has been completely turned and mixed, leaving the aggregate spread uniformly over the street.

The second application of bituminous material is then made at the rate of 0.5-gallon per square yard, and the aggregate is completely turned and mixed as before. Mixing is started immediately after each application of bituminous material.

We are using local gravel which carries a considerable amount of fines; therefore it is necessary to use a seemingly heavy application of asphalt.

When the bituminous-coated aggregate shows signs of "stiffening up" and becomes sufficiently hard to bear the weight of the roller without shoving, it is compacted with a self-propelled roller weighing not less than 7 tons. The wheels of the roller should be provided with adjustable scrapers to keep them clean while in use. The roller should be equipped with water tank and sprinkling devices where necessary to wet the wheels and prevent the bituminous material from adhering to them.

The rolling proceeds gradually toward the center from each side until the entire course has been thoroughly keyed, the interstices of the metal reduced to a minimum, and all settlement has ceased. Depressions which develop in the surface during rolling, as revealed by a 20-foot straightedge, are eliminated by spreading additional bitu-

BEFORE AND AFTER COMPLETING THE BITUMINOUS ROAD-MIX SURFACE ON A STREET IN SEYMOUR, IND.

minous-coated aggregate over the low places and re-rolling and re-checking.

Seal Coat

After the surface has been rolled to satisfaction, the third application of bituminous material RC-2 is applied at the rate of 0.25-gallon per square yard. This application is the seal coat, which is immediately covered with torpedo sand at the rate of 15 pounds per square yard. Not more than 50 per cent of the sand may pass a No. 8 sieve, and not more than 5 per cent may be retained on a No. 4 sieve.

These streets require another final seal coat of 2 gallons per square yard the following year; then about three years later. By using local material the cost of these streets, including grading and everything completing the streets, ranges from $0.32 to $0.37 per square yard, for about 2¼ inches compacted.

The curb and gutter on these projects were replaced where necessary.

By this method Seymour has secured smooth, easy-riding pavements good for years of service at an expenditure much lower than would have been required for reconstruction. The results obtained over the past four years have been so satisfactory that property owners in greater numbers than in any previous year have petitioned for this type of improvement. Harry K. Williams was contractor on the street construction performed during 1935 and 1936. Texaco asphaltic material was used.

Electric Transit Made Speedier and More Comfortable

By W. J. CLARDY
Transportation Division, Westinghouse Electric & Manufacturing Co.

A TREMENDOUS advance has occurred in urban transit during the year 1936. Changes, viewed as revolutionary a few years ago, provide rolling stock that is speedy, comfortable and efficient.

The trolley coach demonstrated its growing popularity by almost doubling the number of vehicles used—from 518 to 995. The single 125-hp motor 40-passenger vehicle has simplified equipment, reduced costs and lowered weights. Since the 40-passenger single-motor trolley coach became available, five out of seven properties have used it for initial installations. These applications, requiring 224 vehicles, are in Cincinnati, Louisville, Milwaukee, Portland, and Youngstown.

The modern car, as developed by the electric-railway Presidents' Conference Committee, is superior to any other vehicle for surface mass transportation. It provides a phenomenal improvement in schedule performance and passenger comfort. The deep-cushioned, forward-facing seats, wide, clear-view windows, indirect non-glare illumination, together with faster but exceptionally smooth starting and stopping, all prove attractive to riders. High, free-running speed, rapid acceleration and braking, and dependable brake functioning with poor rail or with trolley off, assure the ability to keep in advance of competing traffic. Baltimore, Brooklyn, Chicago, Los Angeles, Pittsburgh, and San Diego are placing 391 of these cars in service.

A new standard in rapid transit travel has been set by the 30 multi-section cars placed in service by the New York Rapid Transit Corporation. One of these cars weighs 174,000 pounds complete without load, seats 198 passengers, and has standing capacity for 514 passengers. Schedule speed improvements of 35 per cent are practicable, and accelerating and braking are double those of conventional subway equipment. Here, as elsewhere in transit, light, quiet and comfort are being added to a speedy ride.

THE TROLLEY COACH IN TOLEDO AND IN BOSTON

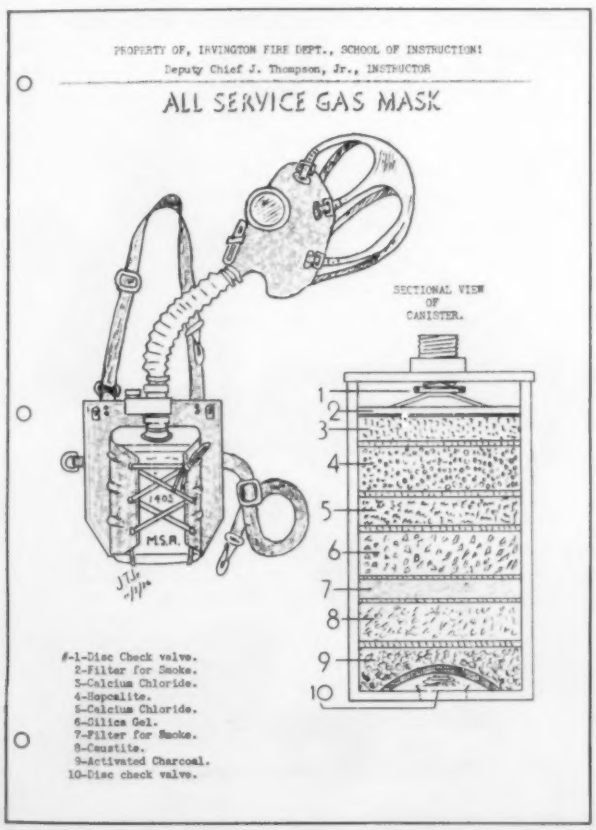
The Mack coach at left was installed in January, 1935; the Pullman-Standard at right, in April, 1936. Each is 40-passenger capacity and equipped with two motors. They make 7½ stops per mile and maintain a scheduled speed of 11 miles per hour

Irvington's New Squad Car Reflects a Snappier Fire Department

By JAMES THOMPSON, JR.
Deputy Chief in Charge of Squad

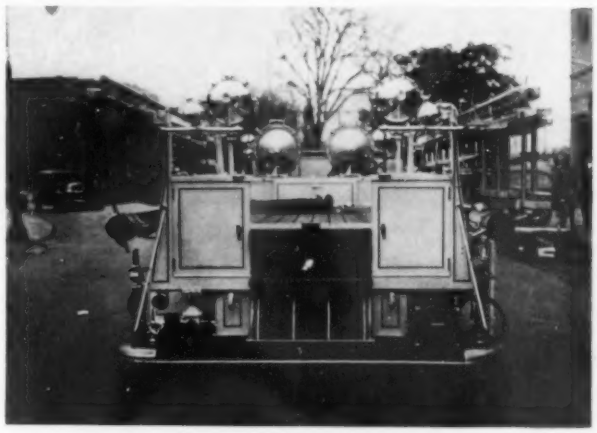
IN 1934, our newly elected Director of Public Safety, Edward D. Balentine, requested the National Board of Fire Underwriters to rate the city of Irvington, N. J., and the rating they gave us was distinctly unsatisfactory. We set out immediately to correct the situation.

Our first move was a drill school for officers, which ran for seven months with every officer and man attending at least five times per month. Training was carried on also in the fire stations, each platoon devoting 15 minutes a day to physical drill. On the long day (24 hours on), an hour and a half was given to discussions of the work. In the winter the time given to this station schooling was doubled, and a first-aid course was instituted. By the summer of 1935, every member of both Fire and Police Departments held a card from the American Red Cross.



ONE OF IRVINGTON'S MIMEOGRAPHED INSTRUCTION SHEETS

The canister, timed for two hours, contains 8 layers of chemicals, each of which takes care of a different type of gas or vapor. At top and bottom are disc check-valves which open when the wearer inhales. Layers 2 and 7 are cotton for filtering smoke. Layer 4 is Hopcalite, which catalyzes carbon monoxide, and this is protected by layers above and below of pure anhydrous calcium chloride which acts as a dryer. Layer 6 is Silica Gel, which absorbs ammonia fumes. Layer 8 is Caustite, which acts as a dryer and an absorbent of acid gas. An outstanding value of this mask is as protection against CO



REAR VIEW OF THE SQUAD CAR, WITH FLOODLIGHTS

Apparatus was reconditioned. A 2-kw Kohler generator for fire-line use, which had been mounted on its own chassis and was sent for only when the obvious need for it arose, was placed on a piece of new apparatus that answered all alarms. The salvage branch, consisting of covers, mops, squeegees, was enlarged, and a sewing machine was purchased for making repairs. We now have 50 covers on our apparatus.

The new apparatus is a modern American-LaFrance emergency squad car that replaced an 11-year-old hose wagon. It is a "six-in-one" machine, equipped with 750-gallon pump, 500 feet 2½-inch hose, salvage equipment, searchlight rig, and field hospital, and is capable of conversion in five minutes into a covered ambulance. The 250 rescue tools include 1,000 feet of rope, a rigging-burning outfit, jacks and cribbing. In addition to the 2-kw generator, this car carries a 1,250-watt Homelite portable generator.

THE PRONE PRESSURE METHOD OF RESUSCITATION

GAR WOOD HOISTS AND DUMP BODIES

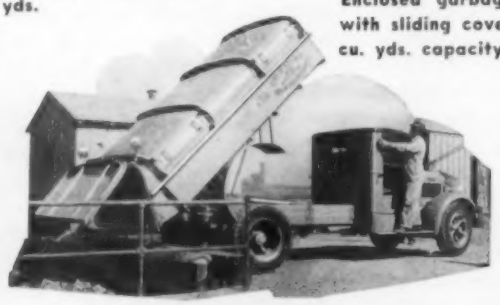
BALTIMORE, MD.
Modern, sanitary, all enclosed units; 4½ cu. yds. capacity to loading edge.

For the Collection and Transportation of Garbage, Rubbish and Ashes

To those interested in improving the efficiency of their collection service, Gar Wood offers a vast store of experience. During the past 24 years, Gar Wood engineers have designed and built truck equipment for hundreds of municipalities, both large and small. A few typical examples are shown here. We pride ourselves in our ability to design hoists and bodies best suited to meet specific requirements. Let us cooperate with you on your next collection units.

MEDFORD, MASS.
"Barn door" tailgate to handle rubbish, hinged sides to facilitate loading. Total capacity, 8 cu. yds.

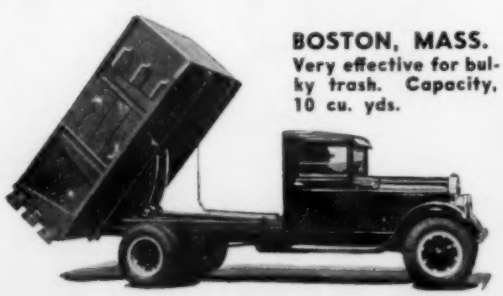
ST. LOUIS, MO.
Enclosed garbage units with sliding covers. 4½ cu. yds. capacity.



ELMWOOD PARK, ILL.
Low mount trailer dump. Capacity, 12 cu. yds. Model T33 telescopic hoist.

LAKEWOOD, OHIO
Exceptionally low mounting provided by model T33 underbody telescopic hoist.

BOSTON, MASS.
Very effective for bulky trash. Capacity, 10 cu. yds.



GAR WOOD INDUSTRIES, INC.
DETROIT, MICHIGAN

WORLD'S LARGEST MANUFACTURER OF TRUCK EQUIPMENT

It is equipped with radio, as are the chief's cars, and carries 100 feet of ladders, including a 3-section 35-foot extension. An important item is a high-speed camera for photographing scenes of fire.

Manned by Policemen and Firemen

Though classed as fire apparatus and stationed in a fire house, the apparatus is manned by police as well as firemen. The crew comprises a fire captain, four first-grade firemen and two patrolmen, and it answers all emergency calls. In the first 13 days it responded to 52 calls. There is no conflict whatever between the two departments. We in the Fire Department do not want to do a policeman's work, but feel we are qualified for it, and the police officials are willing that policemen should do firemen's work.

Plans are completed for a six-story combination training tower and classroom, which is expected to be an asset to both Irvington and the adjacent municipalities.

Our 1937 plans include additional men and officers, a new ladder truck, and two-way radio between stations.

In addition to the regular work of the Department, we are preparing and assembling an instruction book consisting of hundreds of mimeographed sheets, leaflets and pamphlets.

What the Cities Want from Washington

THE Executives of the principal cities of the United States, as represented in the U. S. Conference of Mayors, still feel that the Federal Government is responsible for the relief of "the employables" and that work relief is the American way. Consequently, heading the list of resolutions adopted at their recent Annual Conference in Washington, D. C., we find the determination to petition Congress, immediately upon its convening, to provide adequate funds to carry the work program forward, on the basis of providing jobs to all employable persons, for the duration of the present fiscal year.

A second resolution concerns the authorization of sufficient funds to complete the present PWA program, and recommends the establishment of PWA as a permanent agency of the Federal Government, with such powers and duties as may make it possible for the Federal Government, when economic conditions so demand, to be prepared to provide substantial stimulus to employment on public works throughout the country.

Third, the cities feel that the relief of the transient unemployed is a peculiarly national problem, and that Congress should enact a transient relief program.

The fourth resolution calls for the enactment of housing legislation—either Senator Wagner's bill or a new one—to help the cities meet the responsibility of providing decent, cheap and healthful houses for those unable to secure such housing, and to eliminate slum areas.

Number five will take the form of a petition to the President and Congress to give consideration to the consolidation of all present welfare activities of the Federal Government into a Department of Public Welfare.

Six, the Trade Commission should create a special unit to act against collusion by manufacturers in selling supplies, materials and equipment required by cities.

Seven, the Federal Government should adjust state and city claims more equitably, since some cities have been unfairly discriminated against.

The eighth resolution, prompted by the maritime strike, proposes that the Railway Labor Act should be extended to embrace all means of transportation engaged in interstate or foreign commerce, carrying freight, passengers or mail, in order to prevent the interruption of service and at the same time to protect the interests of all concerned.

Nine, a committee should cooperate with Federal agencies to aid cities in getting natural gas service at reasonable rates.

The tenth and last proposal for the attention of the Federal Government recommends a national survey of municipal financing, in the hope of establishing a central Federal agency through which cities could do their financing at low interest rates.

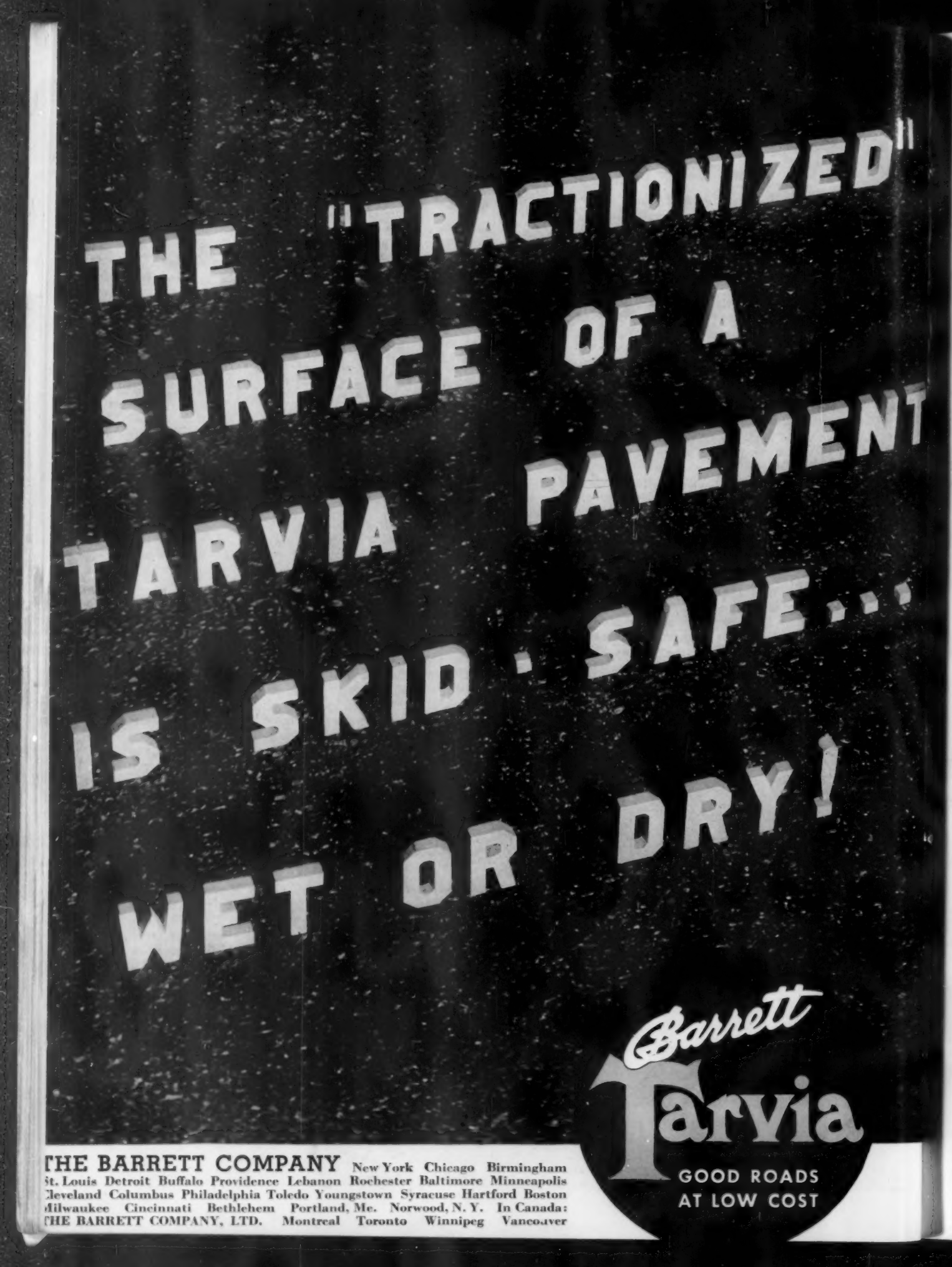
Plenty of Room for Spacious Housing

IN an address on December 4, at the annual dinner of the National Association of Housing Officials, in Philadelphia, Sir Raymond Unwin used an illustration of the folly of land-overcrowding which THE AMERICAN CITY has since put in graphic form in the outline map of the United States here reproduced. To accompany this map, Sir Raymond writes:

"At the last census the population of the United States of America contained about 30,000,000 families. At 10 families to the acre, they would need 3,000,000 acres for their dwellings; or 4,688 square miles, representing a patch of ground 70 miles square.

"As a like area would be a very liberal allowance to cover the area occupied by all business and industrial buildings, the total, 9,376 square miles, representing a patch on the United States measuring 97 miles square, would be sufficient to accommodate the whole of the population of the United States in towns having an average density for the dwellings of not more than 10 families to the acre."

The solid black spot on the map is an area 100 miles square. The larger square is 200 miles across, and has therefore more than four times the area specified by Sir Raymond. If half of this larger space were properly apportioned among the *urban* families of the United States—of whom there are about 17,400,000, there would be approximately ¾-acre of land for each family: and if the other half were assigned to other municipal purposes, there would still remain 2,986,789 square miles, 98.7 per cent, of land area in the country for farms, forests, mines, national and state parks and other non-urban uses!



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A Costly Snowstorm

The Story of the Sudden Storm of September 27, 1936, and Its Cost to the City of Denver, Colorado

By THOMAS R. ELKINS
Highway Department, City and County of Denver

SEPTEMBER 27, 1936, will long be remembered by the citizens of Denver. It was on this date that the city was visited with the most destructive snowstorm in its history. Beginning in the late afternoon and continuing throughout the night, there was a steady downfall of very wet snow—a total precipitation of 2.84 inches of water being recorded by the Weather Bureau.

Denver has enjoyed a reputation throughout the world as being a city of beautiful trees and shrubbery. Most of the damage from the storm was due to the fact that the leaves on the trees and shrubs retained the snow until they broke under the load.

A Sudden Blow

The writer drove to Boulder, Colo., a small city nestling at the foot of the main range of the Rocky Mountains, about 30 miles from Denver. It was while in Boulder that the storm began. At about 6 o'clock P.M., we started back to Denver. The roads were passable, but driving was slow. Upon reaching Denver after a three-hour return trip, we experienced a sight never to be forgotten.

We cautiously wended our way through the fallen branches until we reached home. Many times it was necessary to back the car several blocks, in order to find an open path in the direction in which we wished to proceed.

After several hours we reached our destination—and what a sight when we arrived! A stately maple on the front parking—26 years in the making—was a total wreck. The entire top was gone under the terrific load of snow. Branches 6 inches in diameter and larger were snapped off as if they had been severed by artillery fire.

This condition existed over the entire city. All during the night and early morning hours, one could hear the constant breaking of tree branches. In the parks, the damage was more severe because the tree branches did not lean against houses as they did in the residential district.

The loss in the parks alone has been estimated at $4,000,000. Entire trees must be removed because they have been injured beyond nature's ability to repair them. This is likewise true in most of the residential district.

Mobilization

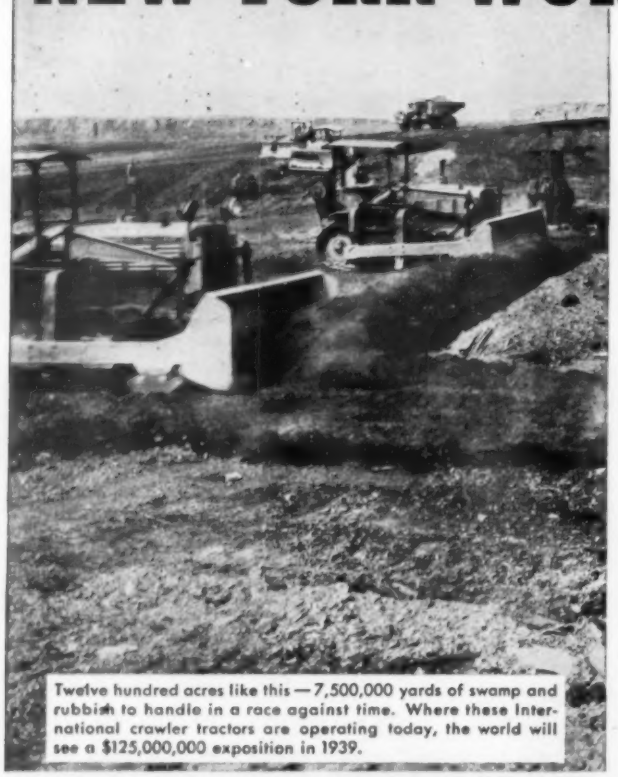
The Highway Department employs emergency truck drivers who are on duty every day and night. These men were extremely busy keeping the main streets open to late traffic. It soon became apparent that their task was hopeless. We struggled through the rest of the night with this small force of men, but at 7 o'clock on the morning of September 28 it was different.

The entire force of both the Street Cleaning Department and the Highway Department was mobilized and set to work opening several of the main thoroughfares. It did not take long to find out how inadequate this force of 550 men and 150 trucks would be.

The Mayor, Ben F. Stapleton, was advised of the condition, and he immediately called on the District Engineer for the WPA. The situation was discussed at length with the Federal Government officials, who, after receiving

CCC WORKERS SEARCHING OUT LIVE WIRES AHEAD OF THE CLEARING ON A RESIDENTIAL STREET

INTERNATIONAL Crawler Tractors
LAY GROUNDWORK FOR
NEW YORK WORLD'S FAIR 1939



Twelve hundred acres like this — 7,500,000 yards of swamp and rubbish to handle in a race against time. Where these International crawler tractors are operating today, the world will see a $125,000,000 exposition in 1939.

Aerial view of Flushing Meadows, before reconstruction operations began — one of the world's worst waste spaces, the site of a new and greater World's Fair. PHOTO BY AERIAL EXPLORATIONS, INC.

One of the International tractors in the fleet that is surpassing contractors' expectations on the site of the Fair.

The ancient Brooklyn Ash Dump in the Flushing Meadows on Long Island—miles of man-made desert where Manhattan and Brooklyn have heaped their rubbish for forty years—is a scene of great activity this winter. In 1939 New York City will entertain you there at a greater World's Fair.

Right now it's a job for the Johnson-Necaro Co., who shouldered a $2,000,000 contract to handle 7,500,000 yards of tangled refuse in a race against time. On April 1 they will deliver parks and lagoons where they took over chaos in the form of ashes and old iron.

The Johnson-Necaro Co. is coming on fast with International TracTracTors—the crawler-tractor product of International Harvester. A fleet of T-40 TracTracTors and bulldozers has been on the job for months now, handling 90 per cent of the vast yardage of material coming from the shovels and dump wagons.

Out there on Long Island today W. R. Staehlin, general superintendent, will tell you about how much these tractors can take, and how they perform while taking it. William Beattie and Charles Downing, chief engineer and general master mechanic, respectively, prove to us that what we claim about International service, and about accessibility of working parts, is understatement. And A. D. Saunders, operating vice-president, goes over the whole matter and says "That goes not only for me but for everybody on the job. I'd duplicate the entire order right now if we needed to."

This wouldn't mean so much coming from a green outfit, but the Johnson-Necaro organization is "tops" in the East. They have taken care of a $200,000,000 total in subway, tunnel, and other work in Metropolitan New York. They know crawler tractors from A to Z — *now.*

• • •

INTERNATIONAL HARVESTER and its full line of International industrial power — *wheel and crawler tractors, power units,* and *motor trucks* — are at your service. Call on any dealer or branch.

INTERNATIONAL HARVESTER COMPANY
606 S. Michigan Ave. (INCORPORATED) Chicago, Illinois

W. R. Staehlin, general superintendent of the Flushing Meadows project. His grandfather held the chair of mathematics at Heidelberg, but Staehlin is no "chair" man. Thirty-two years on the job for the Arthur Johnson Co. have taught him volumes about the practical handling of heavy contracts. A big revelation to him of late has been the efficiency and economy of International TracTracTors.

INTERNATIONAL HARVESTER
INDUSTRIAL TRACTORS . . . POWER UNITS . . . TRUCKS

LIVE WIRES TORN DOWN BY THE FALLING TREES WERE A GREAT HAZARD

authority from Washington, D. C., furnished 338 1½-ton trucks and 6,595 men.

Removing Trees

How would such a catastrophe be met? Our main objective of course was open streets, not necessarily free from tree limbs, but sufficiently cleared in order that traffic might move in an orderly fashion.

The men and trucks furnished through WPA were divided into small groups and assigned to certain areas of the city. These men were furnished with 50-foot lengths of ¾-inch manila rope, double- and single-bit axes, and one-man crosscut saws. The city purchased 4,800 feet of rope, and approximately 150 axes and saws, and borrowed some 1,200 axes from the U. S. Forestry Department.

The first operation was the removal of tree limbs from both sidewalks and streets. Wherever necessary, they were pulled down from the trees—cut into smaller sizes and piled on the parking. If vacant lots were available, the tree limbs were dragged by hand to this point and piled, to be removed later to various city dumps.

In most cases, the haul was to the vacant lot rather than the dump. It has been estimated that some 23,000 loads were handled by the WPA men and the trucks, at a cost to the U. S. Government of approximately $210,000 for labor only, for the seven days they were employed on this emergency project.

Finances Limited for Emergencies

Do the taxpayers ever stop to realize how unprepared most cities are to handle such an unprecedented storm; or, for that matter, the equipment required to handle the regular routine tasks of maintaining streets and alleys and keeping them clean?

The Street Cleaning Department and the Highway Department had a combined appropriation of $690,000 for the year 1936. Of this amount, nine-twelfths had been used ($517,500), leaving approximately $173,500 in the funds when the storm arrived in Denver.

It can be seen at a glance that we were seriously handicapped for equipment, men, and finances. The combined forces of the Street Cleaning Department and the Highway Department numbered 550 men and 150 trucks to cope with this abnormal condition. If the U. S. Government had not come to our aid, there is no telling when or how we should have furnished the task.

The cost to date to the regular city departments, apart from the usual routine, where it is possible to separate, has amounted to about $8,000. A large number of vacant lots are still piled high with limbs and need to be cleaned before spring. We are doing all we can to remove these unsightly piles and at the same time continue our routine functions. During the entire operation we have been fortunate in not having any serious storms to handicap us.

A WPA TRUCK AND CREW REMOVING BROKEN BRANCHES

Nineteen Mayors Appointed to Conference Advisory Board

ON December 20 the appointment of nineteen mayors of large American cities to membership on the Advisory Governing Board of the United States Conference of Mayors for 1937 was announced by Mayor F. H. LaGuardia, of New York City, President of the Conference.

The Mayors designated were:

Watkins Overton, Memphis, Tenn., Chairman
J. H. Allen, Des Moines, Iowa
Joseph A. Brophy, Elizabeth, N. J.
Harold H. Burton, Cleveland, Ohio
Joseph K. Carson, Jr., Portland, Ore.
R. E. L. Chancey, Tampa, Fla.
Frank Couzens, Detroit, Mich.
Harry D. Durst, Springfield, Mo.
Meyer C. Ellenstein, Newark, N. J.
E. B. Erwin, Salt Lake City, Utah
Hilary E. Howse, Nashville, Tenn.
James R. Law, Madison, Wis.
J. Fred Manning, Lynn, Mass.
C. K. Quinn, San Antonio, Texas
Cornelius D. Scully, Pittsburgh, Pa.
Frank L. Shaw, Los Angeles, Calif.
Charles H. Stanton, Rochester, N. Y.
S. Davis Wilson, Philadelphia, Pa.
George J. Zimmerman, Buffalo, N. Y.

The Advisory Board of the Conference is constituted as one of the Governing Boards of the organization, and it functions on behalf of the cities on all matters of Federal legislation affecting the cities. As such, in the past it has worked with the Conference Executive Committee in charting the policies of the Conference on relief, PWA, housing and other Federal programs affecting the cities.

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Announcing for 1937 . . . A new and complete line of GMC trucks . . . Advanced stream-styling that sets a new standard . . . New Cab-Over-Engine models ranging in capacity up to 12 tons and including the lowest priced 1½ ton of this type now offered . . . New ½-tons in both 126-inch and 112-inch wheelbases, the latter priced at only $395, chassis f. o. b. Pontiac . . . Improvements and refinements throughout the entire line . . . In every capacity range an exceptional value. $395 AND UP

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GENERAL MOTORS TRUCK & COACH
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YELLOW TRUCK & COACH MANUFACTURING COMPANY, PONTIAC, MICHIGAN

During January, we hope you will remember to mention THE AMERICAN CITY

WPA Writers to Gather Municipal Data in 191 Cities

Including All Municipalities Over 50,000 Population

COMPREHENSIVE data on municipal governmental operations in 191 American cities are to be assembled and made available for study under a winter-months program, now under way, which will give employment to workers in the Federal Writers' Project of the Works Progress Administration.

All American cities of more than 50,000 inhabitants are to be included in the survey. The WPA writers will record documents and reports regarding the organization and functions of the various city departments in these municipalities. Only that information will be sought, however, which may be easily obtained without inconveniencing the city officials from whom the data must be obtained. The survey will be limited to published documents and reports except in those instances where important information may be obtained by copying recorded material. However, no requests will be made to allow the WPA workers to do such copying when this will in any way slow up municipal procedure or inconvenience the officials.

After the material is assembled, it will be turned over to the Census Bureau of the Department of Commerce, which will establish a Municipal Reference Library and Information Service. The Census Bureau will catalog the material and keep the information current.

Municipal officers may request from the Municipal Information Service data on any phase of city government in which they are interested, and research students will also have access to the assembled material. Efforts will be made by the project workers to obtain from each city two copies of the various city documents; for instance, two copies of the city charter, two copies of the police manual, two copies of the comptroller's report, etc.

One of the documents will be placed in a permanent file, from which it may not be removed, while the second copy will be kept available for municipal officials who may borrow it for limited periods. In this manner, data will always be available at the library in Washington, and municipal officers at the same time may have access to the material without the necessity of a visit to the Capital. Officials of many cities have been advised of the project and have promised to cooperate.

Scope of the Project

The material to be obtained will include data of a general nature, such as the city charter and code of ordinances; material pertaining to the administrative functions; the methods of holding elections; administrative personnel; pension system; purchasing methods; budget; general financial reports; data on taxes, including property valuation; public safety details, including police and fire regulations; building inspection; smoke control; public health and hospitals; highways and streets; sanitation and waste removal; street lighting; city planning and zoning; housing; welfare and corrections; parks and recreation; education; public and privately owned utilities; airport management; cemeteries and crematories; liquor control; special regulatory ordinances; courts; industrial regulations; and research studies.

Available documents, reports and studies pertaining to the above phases of municipal government will be obtained, and, in addition, any local municipal surveys or research publications.

Stress is placed upon those informational matters that have proved to be of interest to city officials. A check list of information has been prepared, with a view to getting practical data that would be directly useful to municipalities.

The United States Conference of Mayors was the inspiration for the Municipal Survey project, and aided in developing the plans. Requests for information along the lines to be covered in the survey are frequently received by the Mayors' Conference and other agencies. Up to the present time such material has not been available, however, except to a limited extent in the Financial Statistics of Cities issued periodically by the Census Bureau.

The personnel which will make the survey will be taken from relief rolls. Many of the workers are former newspaper men and women, and numbers of them have had experience in covering municipal affairs. This experience will be useful to them in ascertaining the facts to be covered by the survey. Some of the project workers will be those who have recently completed work on the American Guide, the compendium of Americana prepared by the Writers' Project.

The number of workers assigned to each city will vary with its size. Only one worker will be required to collect the documents and material in the smaller cities, while several will be needed in the larger municipalities.

Cities to Be Covered

Alabama
Birmingham
Mobile
Montgomery

Arkansas
Little Rock

California
Berkeley
Fresno
Glendale
Long Beach
Los Angeles
Oakland
Pasadena
Sacramento
San Diego
San Francisco
San Jose

Colorado
Denver
Pueblo

Connecticut
Bridgeport
Hartford
New Britain
New Haven
Waterbury

Delaware
Wilmington

Florida
Jacksonville
Miami
Tampa

Georgia
Atlanta
Augusta
Macon
Savannah

Illinois
Chicago
Cicero
Decatur
East St. Louis
Evanston
Oak Park
Peoria
Rockford
Springfield

Indiana
East Chicago
Evansville
Fort Wayne
Gary
Hammond
Indianapolis
South Bend
Terre Haute

Iowa
Cedar Rapids
Davenport
Des Moines
Sioux City

Kansas
Kansas City
Topeka
Wichita

Kentucky
Covington
Louisville

Louisiana
New Orleans
Shreveport

Maine
Portland

Maryland
Baltimore

Massachusetts
Boston
Brockton
Cambridge
Fall River,
Holyoke
Lawrence
Lowell
Lynn
Malden
Medford
New Bedford
Newton
Quincy
Somerville
Springfield
Worcester

Michigan
Detroit
Flint
Grand Rapids
Hamtramck
Highland Park
Jackson
Kalamazoo
Lansing
Pontiac
Saginaw
Dearborn

Minnesota
Duluth
Minneapolis
St. Paul

Mississippi
Jackson

Missouri
Kansas City
St. Joseph
St. Louis
Springfield

Nebraska
Lincoln
Omaha

New Hampshire
Manchester

New Jersey
Atlantic City
Bayonne
Camden
East Orange
Elizabeth
Hoboken
Irvington
Jersey City
Newark
Passaic
Paterson
Trenton
Union City

New York
Albany
Binghamton
Buffalo
Mount Vernon
New Rochelle
New York
Niagara Falls
Rochester
Schenectady
Syracuse
Troy
Utica
Yonkers

North Carolina
Asheville
Charlotte
Durham
Greensboro
Winston-Salem

Ohio
Akron
Canton
Cincinnati
Cleveland
Cleveland Heights
Columbus
Dayton
Hamilton
Lakewood
Springfield
Toledo
Youngstown

Oklahoma
Oklahoma City
Tulsa

Oregon
Portland

Pennsylvania
Allentown
Altoona
Bethlehem
Chester
Erie
Harrisburg
Johnstown
Lancaster
McKeesport
Philadelphia
Pittsburgh
Reading
Scranton
Wilkes-Barre
York

Rhode Island
Pawtucket
Providence

South Carolina
Charleston
Columbia

Tennessee
Chattanooga
Knoxville
Memphis
Nashville

Texas
Austin
Beaumont
Dallas
El Paso
Fort Worth
Galveston
Houston
Port Arthur
San Antonio
Waco

Utah
Salt Lake City

Virginia
Norfolk
Richmond
Roanoke

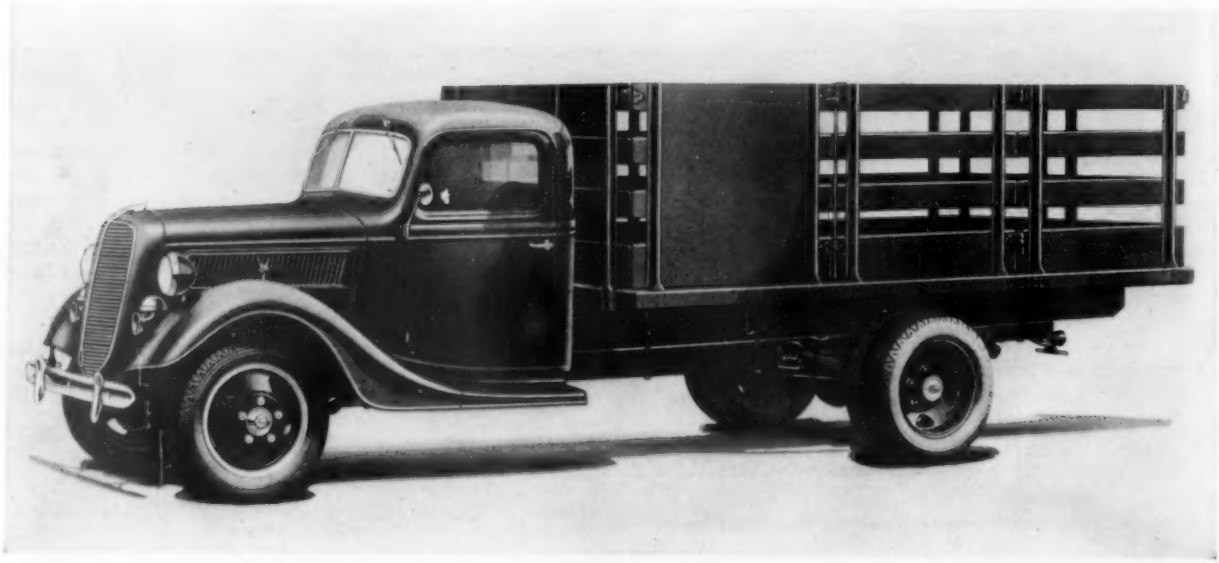
Washington
Seattle
Spokane
Tacoma

West Virginia
Charleston
Huntington
Wheeling

Wisconsin
Kenosha
Madison
Milwaukee
Racine

FORD SHOWS THE WAY

TO LOWER CITY HAULING COSTS



NEW ECONOMY... NEW STYLE...CHOICE OF

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Ford sets the pace in hauling and delivery economy! Two V-8 engine sizes give you a choice of power to fit your own individual needs. The improved 85-horsepower V-8 engine assures economy for heavy-duty service. The new 60-horsepower V-8 engine sets an entirely new standard in the light delivery field. It will pay you to get the facts about this Specialized Transportation.

In addition to the most advanced style in truck design, Ford introduces many new features that assure lower operating cost and longer life. These are added to the many tried and tested features which have won the enthusiastic approval of Ford owners for years. Ask your Ford dealer for an "on-the-job" test—with your own load, under your own operating conditions.

MATCHING THE HIGHEST IN QUALITY . . . SELLING WITH THE LOWEST IN PRICE

Forward Steps

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

Municipal Insurance

HARTFORD, CONN.—A set of 28 rules and regulations has been published by the Board of Contract and Supply with respect to the city's insurance and bonding requirements. The Board is charged with the complete and sole responsibility imposed by the legislative act—"to procure for the several departments of the city such insurance as, in the opinion of said Board, may be required in order to protect the city adequately against loss or damage from fire or otherwise."

All policies of insurance and bonding required by any department of the city must be billed direct to the Board by the various insurance and bonding companies, and the premiums involved are to be paid direct to the companies from the budget funds provided yearly for insurance and bonding requirements. Insurance required by any department of the city is to be reported to the Board by the head of the department, by written request, in duplicate, for immediate binding with the companies designated. All loss and accident reports concerning city property and policies of insurance and bonding must be made by the department in writing, promptly and directly to the Board of Contract and Supply.

A list of approved companies for the different kinds of insurance is given in the rules and regulations. All the insurance of any department must at all times be consolidated by class, and as far as possible under one form.

At no time shall personal surety be accepted. Any official or employee of any city department using his own car, or borrowing or hiring others not belonging to the city for use during performance of his duties, must furnish his own policies of bodily injury liability and property damage liability insurance, as prescribed by the Board of Contract and Supply for the protection of the city.

A. N. PREMO,
Insurance Supervisor, Board of Contract and Supply.

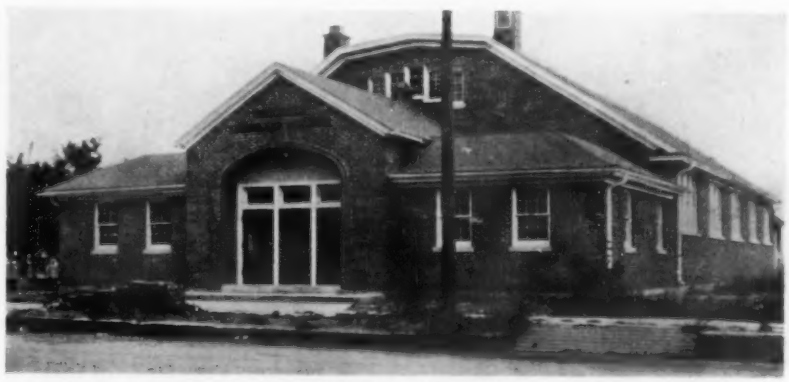
New Community Halls in Small Wisconsin Cities

PITTSVILLE, WIS.—For many years the people of Pittsville wanted a fine community hall, but there seemed to be no chance of getting one, because, with a population of only 508, Pittsville is Wisconsin's smallest city and the raising of funds to build a community hall of note was quite a job.

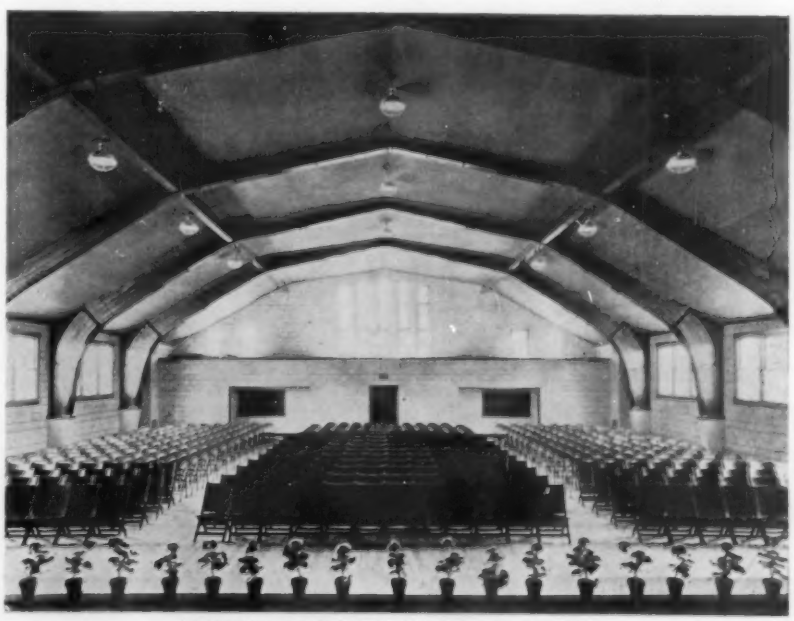
Then came help from the Government in erecting public buildings, provided the communities themselves would pay part of the cost. Pittsville saw its chance, and finally made arrangements to erect a $25,000 community hall. Of this amount, PWA provided $10,000, and the city of Pittsville $15,000. Even the latter amount was quite a sum to raise, but the citizens were willing, because a big, roomy community hall as the center around which the life of the city would revolve was what they wanted.

Several months ago the hall was dedicated and the event was one of the most outstanding in the territory. Visitors who came to Pittsville saw a fine building, 114 by 55 feet, of face brick and glazed tile. It contains a large auditorium with a stage and a motion picture projection booth; also a fine council room, a fully equipped kitchen, check rooms, rest rooms, and a shower and dressing rooms. It will be used for high school athletics as well as for community gatherings. The building fits into the "homey" atmosphere of Wisconsin's smallest city, yet is large enough to handle practically any community event.

When agitation was first begun for a community hall, a number of the citizens organized themselves into the Pittsville Community Hall Club. They helped to arouse enough interest in the hall so that the project finally went through. Members of the club obtained a donation of land as a site for the hall. Now that

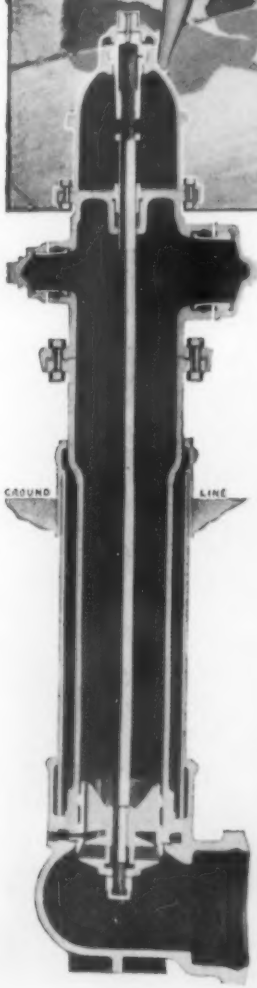


THE COMMUNITY HALL, PITTSVILLE, WIS.



PESHTIGO COMMUNITY HALL, PESHTIGO, WIS.

"LOOK AT THAT Frost-Heave! IS THE HYDRANT CRACKED?"



Don't worry about that hydrant. It's a Mathews — built for emergencies. A deep frost can grab it in an iron grip and heave straight up, but there is no strain on the hydrant itself. All water-carrying parts are safe, because the loose protection case takes all the thrust of frost-heaved ground.

For 60 years Mathews Hydrants have been built to meet the emergencies of cold, heat, accidents, forgetfulness, and fire. Mathews Modernized Hydrants are ready to deliver water under any circumstances.

Specify Mathews. Remember, every fire is an emergency.

• • •

The protection case, surrounding the barrel, is loose. Frost can lift it without straining the hydrant or its elbow. This same loose protection case lets the hydrant be unscrewed and lifted out for inspection or repair without digging.

Mathews Hydrants
BUILT FOR EMERGENCIES

R. D. WOOD CO.
400 Chestnut St., Philadelphia, Pa.

manufacturers of SAND-SPUN PIPE which is centrifugally cast in sand molds, and R. D. Wood heavy-duty gate valves for water works.

the hall has been erected, the club does not plan to disband, but will study other community improvements.

THE PESHTIGO COMMUNITY HALL

PESHTIGO, WIS.—This thriving little city near the Wisconsin-Michigan border has a combination community hall which is one of the finest in the state, and is also quite different from many others. It serves as a satisfactory gymnasium for the local high school and as a recreational building for the citizens as well.

During the recent depression, when citizens of Peshtigo wanted to build a community hall, architects told them that it would cost at least $30,000 to build one containing all the facilities that the citizens demanded through the School Board. This amount was too great, however, and the matter was dropped for a while.

Then one day a School Board member got in touch with an architect who maintained that a building meeting all the Board's requirements could be erected for $19,000. Finally this architect's services were engaged, and in preparing his plans he included the glued, laminated construction which resulted in the saving of considerable money. This construction is used extensively in the roof of the hall. The roof supports are composed of arches made of thin wood laminations joined together to give the necessary strength, and can be shaped into any desired form to give the required appearance of the interior of the building.

The final result in the Peshtigo hall is a structure with compact wooden arches of an ornamental appearance. In addition to serving for the support of the roof, these arches are sharply curved and extended along the sides of the building to make them self-supporting. In this manner the roof is entirely independent of the rest of the building.

The ordinary roof support, which these arches are designed to replace, is composed of triangular or curved upper members tied together at the base by a straight horizontal member, and the whole thing is supported by columns or pilasters which are a part of the walls. The economy of the wooden arches is derived from the fact that they do not need any additional supports, and they do not require the horizontal bracing member at the bottom. The result is that greater height is thus obtained, because interference is eliminated, and the walls can be reduced in height, still leaving as much headroom in the interior of the building as through the old type of construction with higher walls.

The size of the building is 66 by 106 feet. Another new feature embodied in this structure is the type of floor in the auditorium. It is Masonite, consisting of squares 4 x 4 feet in size composed of wood fibers.

The building contains, besides a large basketball floor, which can also be used for dancing, a stage, bleachers, shower rooms for men and women, a wardrobe and a kitchen.

MARTIN FRANCIS.

A Concrete Bleacher for a Small Recreational Field

DICKINSON, N. DAK.—When a new high school building was built on the grounds formerly devoted to recreational purposes in Dickinson, two years ago, it was decided to develop a new recreational site for use by the schools, college, and youth of the city. Through the Works Progress Administration, funds were obtained to construct a concrete bleacher, and to grade and fence an area which was admirably suited to the purpose.

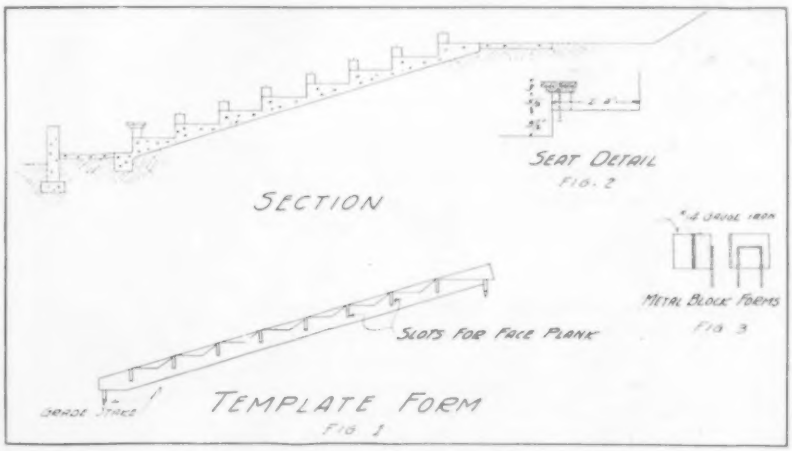
The construction of a concrete bleacher which would seat a thousand spectators and could be built with a minimum of materials, by unskilled relief labor, presented a problem. A rise in the ground on one side of the field made it possible to plan a stepped slab directly on the earth. A quarter-mile running track with a football gridiron in the center was laid out paralleling the contour of the hill. The bleacher was placed parallel with the straightaway of the track and centered on the football field. It was necessary to move about 20,000 yards of dirt to level the field and to grade for the bleacher. The final grading of the slope on which the bleacher slab rested was carried on just ahead of the form setting.

Forms were carefully designed, and laid out so that only a template 26 feet long, a set of eight face plank, and two supporting members were needed to construct the entire bleacher slab. The morning following a pour, the forms were taken down, and moved ahead. In this way a section was poured each day in the six-hour period of work. Sufficient time remained after placing the concrete to excavate the next section, tie the steel, and finish the surface of the new work.

The bleacher, which is 208 feet long, was laid out in alternating 12- and 13-foot sections, with a shorter section on each end. Two templates, as shown in Fig. 1, were constructed. These were each made from two 2 x 12-inch plank 26 feet long bolted together. The inside plank was cut and slotted to receive the face plank. The outer plank was left whole to give rigidity, and strength to the template. After the initial section was poured, only one template was necessary. The extra one was employed in grading the subbase for the following section. Two supporting members were cut. One was used to hold the face planks against the steps previously poured, the other to prevent the middle of the face planks from bulging.

Grade stakes were placed on each section line at the top and bottom. As shown in Fig. 1, the template was placed on top of these stakes. Correct alignment was assured by marking a point on the lower end of the template which was brought to bear directly over a tack in the stake.

Three-eighths round steel was placed one foot on centers running both ways in the slab. Holes were bored in the end template for the rods to project through, in order to tie the sections together. As the slab was only 3½ inches thick at the thinnest points, care had to be exercised in placing and supporting the steel. Ex-



THE GRANDSTAND IN DICKINSON, N. DAK.

SPECIFY STREAMLINE

TRADE MARK REG. U. S. PAT. OFFICE

COPPER PIPE AND FITTINGS

COPPER PIPE PLUS BRONZE SOLDER FITTINGS PRODUCE THE

MOST PRACTICAL PIPE-JOINT

- *Rust Proof*
- *Vibration Proof*
- *Corrosion Proof*
- *Clog Proof*
- *Leak Proof*

● When your plans call for pipe and fittings on new work, remodeling city projects or for water service lines, investigate STREAMLINE Copper Pipe and Solder Fittings before you decide.

STREAMLINE compares very favorably in cost with ferrous pipe, yet, with the exception of abnormal soil and water conditions, it never has to to be replaced due to rust or clogging. The pipe joint is actually the strongest point in the line—constant vibration, resettlement of the fill, etc., has no effect upon it.

STREAMLINE Service Pipe (Type K) is the original copper service pipe, and the first to be produced in America for water service work. It is the most uniformly soft and pliable pipe possible to obtain—it is kept that way through the use of the best copper obtainable for the purpose and through strict laboratory control through every phase of its manufacture.

STREAMLINE Fittings and Type K Copper Pipe are the ideal materials for water works use; for many applications in filtration plants; in aeration lines and in heating coils using the sludge digestion system in sewage disposal plants—and for all general plumbing and heating purposes.

The Mueller Brass Co., Port Huron, Michigan were the first to originate Copper Service Pipe in America. This product has always been made by this Company at Port Huron, Michigan. For identification purposes the pipe is marked every few inches throughout its length as illustrated here.

●

TYPE M PIPE IS MOST GENERALLY USED FOR CONSTRUCTION PURPOSES; TYPE K FOR WATER SERVICE WORK.

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

pansion joints were placed at intervals of approximately 30 feet.

Sheet metal forms, as shown in Fig 3, which could be sprung open were made to form the block on which the seats rest. A U-shaped rod of ¼-inch round iron was welded on the side to form two prongs which were set into holes in the face planks. The spacing of these holes varied for the 12- and 13-foot sections, to allow for an aisle space every 20 feet of bleacher.

After a section was poured, it was allowed to partially set up before the metal forms were filled, for some trouble was experienced with the concrete settling out of the blocks. Two ⅜-inch round bolts, 10 inches long, were placed in each block. They were supported and spaced in the form by a sheet-metal U-shaped clamp fitted on top of the block. The metal forms were sprung open, and pulled while the concrete was still partially soft. If they were pulled at the right time, enough moisture remained inside on the surface of the metal to prevent it from sticking. Only a little trouble was experienced with corners pulling off.

After the first section was poured, the workers became adept at grading, wiring steel, and resetting the forms. Very little supervision was necessary for the remainder of the sections.

The front wall was poured in sections of approximately 50 feet with forms which could be knocked down and reset. Walkways were then poured at the top and bottom of the bleacher, and end walls were finally poured.

To provide seats, blocks of 2-inch material were bolted to the top of the concrete blocks, as shown in Fig. 2. Two 2 x 6-inch planks were then screwed to the wood blocks. All the woodwork was given two coats of aluminum paint.

The cross-section of the bleacher shown illustrates in a general way how the bleacher was designed. The cost of the materials incorporated in the structure was approximately $1,800, or about $1.90 per seat. Sand and gravel were obtained locally at small cost. It was necessary to screen and wash all gravel. No exact record was kept of the labor cost in connection with the bleacher construction. A crew of about twelve men set up and poured a section a day.

This is a fine example of worth-while construction by means of WPA labor. By careful design and supervision, costs were kept down, and the work completed without delay.

L. W. VEIGEL,
City Engineer.

Chicago Street Name System Simplified

CHICAGO, ILL.—The city of Chicago after many years has practically completed its comprehensive street name system. It is interesting to note that the persistent efforts of one citizen, Edward P. Brennen, over a period of 35 years have been the direct cause of the simplification of the system.

The City Club of Chicago and 53 allied organizations, as represented by Mr. Brennen, obtained the support of Mayor Edward J. Kelly in having the City Council pass the necessary ordinances. The writer, who has assisted a number of cities in establishing street name and house number systems, was designated as "Technical Advisor" to the City Council to set up a plan of procedure.

The plan adopted provided for: the elimination of all duplicate street names; changing names of short streets to the names of longer streets on the same line; retention, as far as possible, of street names of historical value to the city.

Chicago is laid out in a flat, level territory. The street system is rectangular, based on the United States Government Section Lines, with a comparatively few curved streets. Before changes were made, it was deemed necessary to educate the citizens to the fact that it was costing them money to have many street names on one line, and duplications in street names, for this caused delays in delivery of merchandise and mail.

The city is composed of numerous communities, each with its own civic and business organizations along lines of nationality and religion. It was thought best to first educate these smaller groups through the large organizations backing the campaign. This plan also gave a certain urge to each of the 50 aldermen when the ordinances came up for passage. Public hearings were held, backed by newspaper publicity, before the actual changes were made.

That this method was successful, was proved by the passage of ordinances changing the names of 111 streets of ⅛-mile or less to the name of the longer street on the same line in each community. The same procedure was followed in changing the names of 74 streets between ⅛-mile and ¼-mile in length. These changes were followed by changes in names of 113 additional streets, which in most cases ran through two or more communities. A total of 298 street name changes were made, including the elimination of duplicate names, which reduced the number of street names in Chicago to 1,363. Many of the names just changed should have been changed years ago when the various annexations to the city were made. This was the third major effort to clarify the street name system of Chicago. The first attempt was made in 1895, others in 1913 and 1936.

There are 3,622.05 miles of public streets in Chicago, and with only 1,363 street names, there is one name for an average of each 2¾ miles of street. While the number of letters in street names varies from 3 to 15, the average length of street name is less than 7 letters. The shortest street is Armstrong Street, only 82 feet long, while Western Avenue is 23½ miles in length, and is the longest developed city street in the world, improved throughout with pavement and curbing. Chicago has 21 streets named after presidents, 16 for states, 46 for women, and 35 for trees.

Chicago's house number system uses two intersecting base lines at right angles to each other, from which each street is numbered, and all streets have prefixes showing the direction in which the street runs. The house number system and the street name system combine to make it easy to locate any given address quickly.

About 63 per cent of the streets have the suffix Avenue for north-and-south streets, and Street for east and west streets. All street name ordinances carry the prefix and suffix abbreviated.

There are fewer street names in Chicago today than in any other large city in the world. London has 5,350 street names, Paris 1,628, New York 5,003, Philadelphia 1,914, Baltimore 3,923, Cleveland 2,199, and Detroit 2,262.

There are many interesting stories in Chicago's street names. There is a South Port Avenue that is not near a port; a River Street not near the water; a Crooked Street that is straight; a Garfield Boulevard that terminates at a Washington Park, and a Washington Boulevard that runs through a Garfield Park. Chicago no longer has Grimm Lipps as the intersection of Grimm Avenue and Lipps Avenue would suggest, for Grimm Avenue has been changed to Ainslie Street, the longer street on the same line.

Many problems had to be solved before the actual street name ordinances could be passed. Nationality and religious prejudices were avoided; good-will was created by considering all suggestions presented; and, finally, the citizens of the city were educated to the lasting value of a simplified street name system.

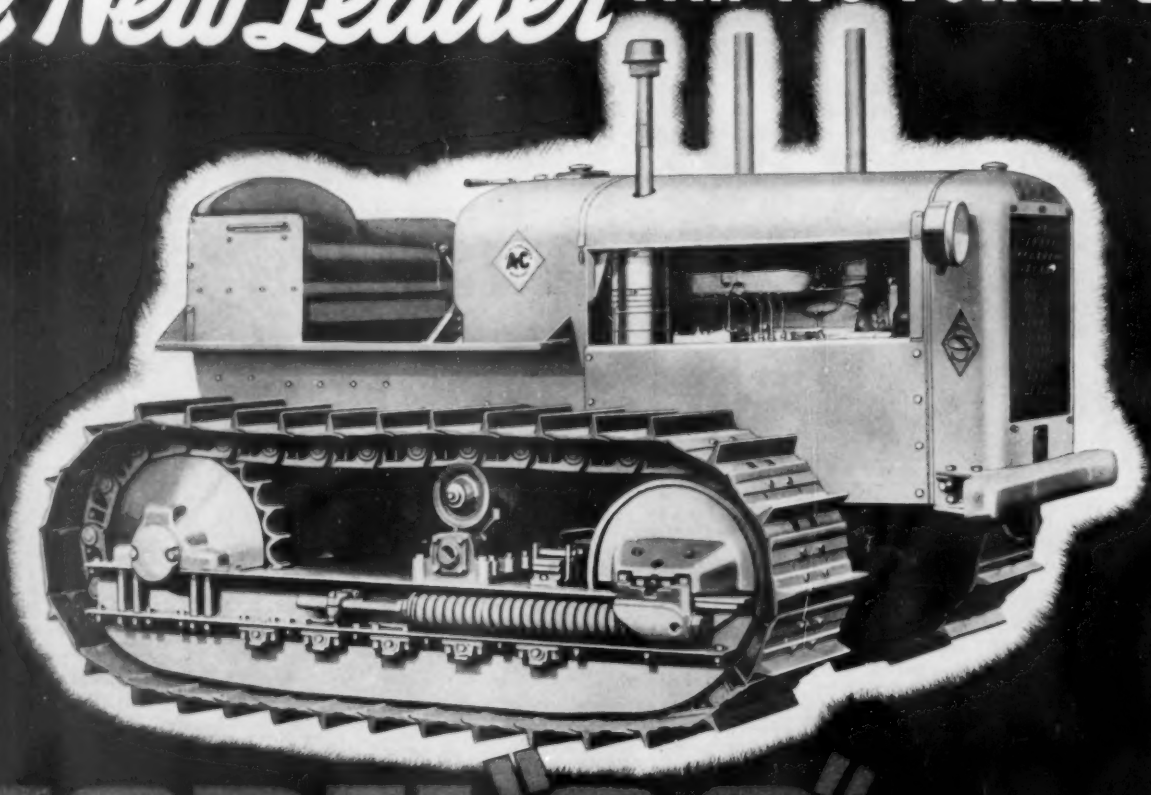
HOWARD C. BRODMAN,
Superintendent of Maps and Examiner of Subdivisions, City of Chicago.

The Municipal Bond Market

Recent sales of new issues from the December numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$240,000	West Hartford, Conn., Town Hall	1.75	1-20 Ser.	1.70
185,000	Monroe, Mich., Refunding Special Assessment	1.75	4.5 Avg.	1.70
302,000	Lawrence, Mass., Water Filtration Improvement	2.	10.33 Avg.	1.93
100,000	Sharpsburg, Pa., Borough	2.25	4.33-9.16 O.-A.	1.93
135,000	Conshohocken, Pa., Sewer	2.	20.66 Avg.	1.94
100,000	Essex Co., N. Y., Highway	2.25	1-20 Ser.	2.07
100,000	Cumberland, Md., Flood	2.5	12 Avg.	2.12
195,000	Rockville Center, N. Y., Lighting	2.20	10.66 Avg.	2.16
357,225	Delaware Co., Ind., Bridge	2.5	10 Avg.	2.40
125,000	Cleveland, Miss., Sewer	3.5	14.33 Avg.	3.41
329,000	College of William and Mary, Va., Building Improvement	4	12 Avg.	3.72
100,000	Charleston, Ill., Water Works and Sewerage Revenue	4	14.16 Avg.	3.80

The New Leader ..IN ITS POWER CLAS



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TO MEET THE NEED for a fast, flexible tractor in this particular power class . . . Allis-Chalmers presents the sturdy, fast-stepping Model "S-O." An entirely new tractor—new engine, new transmission, new tracks—all designed to work together; all built to fit the job. Handles 7 to 8-yard scrapers, 12-foot blade grader or 10-yard track wagon. New Constant-Mesh Transmission—you shift gears with the tractor in motion. Five speeds forward—up to 6.37 miles an hour. Operates on low cost Diesel fuel oil—with the exclusive A-C advantage of Controlled Ignition—one of the greatest tractor improvements in years. The "S-O" brings a new kind of tractor performance to its size and price class.

CONTROLLED IGNITION
FIVE SPEEDS FORWARD; ONE REVERSE
DIESEL FUEL OIL ECONOMY
CONSTANT MESH TRANSMISSION
TRUCK-TYPE GEAR SHIFT
ROLLER BEARING TRACKS
CONTROLLED TRACK ALIGNMENT
MORE POWER PER POUND
INSTANT STARTING
UP TO 6.37 MILES AN HOUR

PULLS 10-YARD TRACK WAGON...

OR 12-FOOT ALLIS-CHALMERS BLADE GRADER

HANDLES 7 TO 8-YARD SCRAPERS

ALLIS-CHALMERS *Controlled Ignition* **OIL TRACTOR**

TRACTOR DIVISION—MILWAUKEE, U. S. A.

Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 1 Park Ave., New York
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Philadelphia's Central Traffic Court

A Progressive Step Needing a Non-Political Judge

By JEWELL CASS PHILLIPS
University of Pennsylvania

WHEN S. Davis Wilson came into office as Mayor of Philadelphia, one of his first important administrative acts was the abolition of the unpopular "towing-squad" plan of enforcing parking regulations. In its place he instituted a new system of enforcement with a central traffic court as its nucleus.

The "Six-Dollar Club"

Under the old towing-squad plan, cars unlawfully parked or abandoned on the streets of Philadelphia were picked up by the police towing squad and impounded in garages which the Director of Public Safety had designated for that purpose. The owners of the impounded vehicles were forced to locate their cars, prove their identity and pay a towing charge of $5 to the Police Bureau, plus a charge of $1 per day for the first five days of detention and 50 cents per day thereafter. Since the offender usually recovered his car the day it was impounded, his total fine was $6, and those who were subjected to this fine became members of the notorious "Six-Dollar Club." From the outset, the towing-squad plan was highly unpopular with motorists, automobile clubs and business men.

Objections to the Towing-Squad Plan

The principal objections to the plan were: (1) the appropriations and personnel provided were inadequate for proper enforcement, and as a result many offenders escaped; (2) there were many cases of discrimination and favoritism in the enforcement of traffic ordinances; (3) certain garages were subsidized under this plan; (4) some contended that the $6 penalty was unjust; (5) visiting shoppers, often unfamiliar with the ordinance, boycotted the city after being subjected to the penalty imposed; (6) the method of enforcement resulted in a serious inconvenience to motorists who were guilty of the most trivial of traffic offenses; (7) many offenders were never arraigned, because of political "fixing"; and (8) in spite of the plan traffic congestion grew steadily worse.

Under the towing-squad plan of enforcement the responsibility for hearing traffic cases was divided among the 28 magistrates' courts of the city. The magistrates are elected by the voters of the city for six-year terms, and the magistrates' courts from their inception have been thoroughly saturated with politics. The report of the Accident Prevention Division in the Department of Public Safety in Philadelphia for the year 1934 shows that there were 41,541 arrests of drivers and owners of automobiles for 16 different types of traffic violations. Of this total, 35,244, or 85 per cent, were discharged. It is a matter of common knowledge that most of these discharges were the result of political fixing by committeemen and division leaders throughout the city.

Central Traffic Court Recommended

Mayor Wilson and many other students of the traffic problem in Philadelphia have taken the position that a central traffic court and a "mail-order" system of collecting fines would eliminate most of the weaknesses of the towing-squad plan. They have been especially interested in the elimination of political fixing.

As early as August, 1926, the Superintendent of Police in Philadelphia had recommended the establishment of a special traffic court over which a non-political judge was to preside. In February, 1927, Owen J. Roberts (now Mr. Justice Roberts) made public the results of a study sponsored by the Philadelphia Chamber of Commerce. In this report Mr. Roberts recommended the establishment of a traffic court and a violations bureau. During the latter part of 1935 the Philadelphia Bureau of Municipal Research came out vigorously for a "cafeteria" court. But the type of court contemplated in these various recommendations required legislation at Harrisburg to authorize a local change. At the time Mayor Wilson came into office it was exactly a year before the next regular session of the State Assembly. It became necessary, therefore, for the Mayor and Council to provide for other means of enforcing traffic regulations.

Hearings in Traffic Cases Centralized

When the magisterial system was provided for Philadelphia, one of the courts was designated as the central police station, where a magistrate would be continuously on the job. The authority and functions of this court were the same as that of the other magistrates' courts in the city. Within three weeks after Mayor Wilson abolished the towing squad, he arranged for the central police station to serve as a Central Traffic Court, and he appointed one of the incumbent magistrates to preside over it.* It was also arranged that all traffic cases arising within the city except those involving accidents should be heard in this court.

Important Features

In addition to the centralization of traffic hearings in the court at City Hall, a mail-order plan of remitting fines was instituted. Moreover, only nominal fines are collected for first offenses in parking cases, and, as a convenience to offenders, hearings are held at night.

Procedure

The procedure under the new plan of enforcement is as follows: The police secure the license numbers of the automobiles of all persons who violate traffic ordinances and provisions of the Pennsylvania Motor Vehicle Code within the city of Philadelphia. These police reports are submitted to the desk sergeants in the districts where the policemen are located, and all the reports are finally sent to the Accident Prevention Division. It is the duty of this division to secure the names of the owners of the automobiles from the Bureau of Motor Vehicles at Harrisburg. Notices are then sent to the owners, indicating the section of the Motor Vehicle Code or the city ordinance violated, and specifying the amount of the fine and costs. The owner may admit his guilt and mail in the amount of his fine to the Traffic Court, or he may contest the case by appearing at the central police station in City Hall. Sessions are held on Tuesday, Wednesday and Thursday evenings. In the event the offender fails to send in the amount of the fine or to appear to contest the case, a warrant is issued for his arrest and $5 is added to the costs.

* The Pennsylvania Supreme Court had held in the case of *Renshaw v. Mayor of Philadelphia, et al*, 248 Pa. 374, that the mayor had this appointive power.

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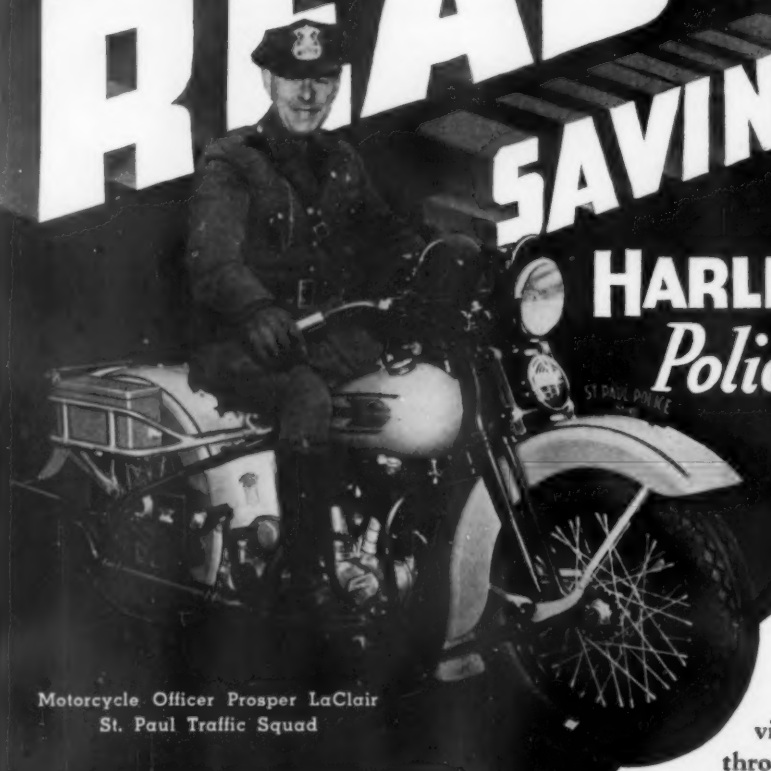

Motorcycle Officer Prosper LaClair
St. Paul Traffic Squad

Six new 1937 Harley-Davidson Police Motorcycles purchased by the St. Paul, Minn., Police Department.

In all sections of the country, police departments equipped with Harley-Davidsons are establishing convincing records in saving lives through better traffic control and greater traffic safety. These records prove the efficiency of motorcycle mounted police — and the importance of speed, stamina, flexibility, and dependability as typified by the new 1937 Harley-Davidson Police Motorcycles.

New features in design, construction, and improved motors include double loop trussed frames—welded steel saddle-type tanks—tubular front forks—built-in instrument panels—circulating pressure oiling—roller bearing motors — longer motor life — greater sustained horsepower — greater strength and easier handling — with remarkably low maintenance and operating cost. *Phone your nearby Harley-Davidson Dealer NOW— to bring over a new 1937 model for your inspection. Or write us for literature.*

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The Police Motorcycle

HOW PHILADELPHIA'S CENTRAL TRAFFIC COURT DISPOSES OF CASES
Figures from Accident Prevention Division, Bureau of Police

Disposition Fined	February	March	April	May	June	July	August	September	October	Grand Total
$50 and costs	0	0	0	0	0	1	0	0	0	1
25 " "	0	2	4	3	3	3	1	0	3	19
15 " "	0	1	1	0	0	2	0	0	0	4
10 " "	26	69	158	111	194	178	87	147	184	1,154
5 " "	155	382	364	181	160	473	344	273	127	2,459
2 " "	4	0	0	0	0	0	0	0	0	4
1 " "	2,933	3,271	2,798	2,512	2,608	2,244	1,151	1,969	2,874	22,360
Costs only	20	0	0	0	0	0	0	0	0	20
Held for court	2	0	3	4	2	1	0	1	2	15
Sent to prison in default of fine	1	2	1	4	5	1	0	2	0	16
Discharged	375	529	685	788	834	1,263	1,225	1,606	1,248	8,553
	(10.7%)	(12.4%)	(17%	(21.9%)	(21.9%)	(30.3%)	(43.6%)	(40.2%)	(28.1%)	(24.0%)
Totals	3,516	4,256	4,014	3,603	3,806	4,166	2,808	3,998	4,438	34,605

Penalties for Traffic Violations

Most of the traffic cases arising under the new plan are simple violations of the parking ordinances which entail a fine of $1 and costs, a total of $3.62. In addition to violations of city ordinances, however, there are 58 possible infractions of the State Motor Vehicle Code over which the Traffic Court has jurisdiction. The fines for these offenses range from $5, or three days in jail, or both, to $200, or three years in prison, or both. The table above shows how the Central Traffic Court disposes of cases coming before it:

Increases in Discharges Significant

Seventy per cent of the cases that came before the Central Traffic Court in Philadelphia during the first nine months of its existence were simple infractions of the parking ordinances. In the beginning, a remarkably low percentage of those summoned were discharged, especially when it is remembered that under the older methods of enforcement the number of those discharged amounted to 85 per cent or more of those summoned. There has, however, been a steady increase in the number and percentage of those discharged since the first month. The percentage for September was 40.2, as against 10.7 for February, and that for October was practically three times the February percentage. This increase is significant. How can it be explained?

Traffic Court Still in Politics

It is practically impossible to determine scientifically the reasons for the striking increase in the percentage of discharges in traffic cases in Philadelphia, but the most careful students of the magistrates' courts have ascribed these discharges to political fixing primarily.

The centralization of hearings in traffic cases at City Hall, the mail-order plan of remitting fines, evening sessions, and nominal fines for minor offenses, are innovations in the enforcement of traffic regulations in Philadelphia for which Mayor Wilson deserves considerable credit. The record shows, however, that the biggest obstacle to effective enforcement has not been removed. Political fixing will likely continue as long as magistrates are selected to preside over the traffic court. In fact, six different magistrates have been called upon to preside over the Central Traffic Court during the first nine months of its existence. Efficient enforcement demands the selection of a non-political judge to preside over the central traffic court. He must be a man who knows traffic law and who is thoroughly trained for his job. Above all, the judge of this court must have that security which comes not solely from long tenure but more particularly from an enlightened and sympathetic public opinion.

"If"— I Were a Traffic Engineer

(With the usual apologies to Rudyard Kipling)

If you can keep your job when those about you
Are losing limbs and blaming it on you;
If you can keep the Common Council happy,
But make allowance for their point of view;
If you can hold impatient drivers waiting,
Before your lights which seldom change to green,
Or gaily place "No Parking" signs on Main Street
And never rouse the dear old public's spleen;

If you can put "full stop" signs at your crosswalks
And get each one enforced without a cop,
And yet secure observance at school crossings
Without removing children with a mop;
If you can once install a safety island
And keep the cars from bouncing off its end,
Or get cooperation from policemen,
That's really something more than "let's pretend."

If you can show by charts in your front office
That safety reigns in every city street,
While cries of awful anguish rise around you,
As citizens are felled like ripened wheat;
If you can get your city's Commerce Chamber
To keep well-meaning hands off your pet plan,
But yet not steal your dear police chief's thunder
And take feminine suggestions like a man;

If you can smile with sunny disposition
While all around there's naught but dirty looks,
And sit upon the hot seat that they give you
While braving storms of politics and crooks;
If you can plot progressive traffic movement
And get results the blueprint says you should,
Then some at least among your many critics
Would grant admission that you're almost good.

If you can purchase traffic apparatus
On budgets that are cut down to the bone,
And get results from worn-out old equipment
That years ago could scarcely stand alone;
If you can do these things and keep your reason
And never feel that you have aught to fear,
Then yours the job, and all the grief that's in it,
And—which is more—you'll be a Traffic Engineer.

PAUL L. GREEN,
Sales Manager, Automatic Signal Corporation.

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Only on a keyboard of this type can you do

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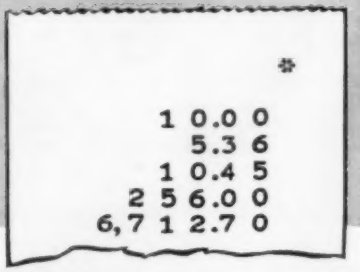

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BURROUGHS ADDING MACHINE COMPANY
DETROIT, MICHIGAN

1 0.0 0 On the Short-Cut Keyboard there is no cipher key. Ciphers always print automatically. The amount 10.00 was written by depressing the "1" and the motor bar—*both in one operation!*

5.3 6 On the Short-Cut Keyboard two or more keys can be depressed at one time. Thus, 5.36 was written by depressing the "5", the "3", the "6", and the motor bar—*all in one operation!*

1 0.4 5 Four digit amounts are easily written the short-cut way. The "1", the "4", the "5", and the motor bar are depressed—*all in one operation!*

2 5 6.0 0 The Short-Cut Keyboard saves operations in writing larger amounts too. The "2", the "5", the "6", and the motor bar are depressed—*all in one operation!*

6,7 1 2.7 0 Many operations can be saved in listing large amounts on the Short-Cut Keyboard. In this instance, the "6", the "7", and the "1" were depressed in the first operation; the "2", the "7", and the motor bar in the second operation. Thus, this large amount requires *only two operations!*

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Improving Municipal Administration

Current Items from the Public Administration Clearing House

Supervising Tax Assessment

MOST authorities on assessment practice hold the belief that the state tax commission should possess supervisory jurisdiction over local assessors, whether city or county, according to Albert W. Noonan, Technical Director of the National Association of Assessing Officers. It is further maintained that the supervision, so far as possible, should be directed along cooperative lines, rather than be a "big stick" affair.

With few exceptions, most state tax commissions do have some degree of supervisory jurisdiction. The cooperation note, however, is not struck in all of these. In some states, cooperation is thrust upon tax officials, others may engage in it or not at their discretion, and still others find that cooperation is most noticeable by its absence.

Information compiled by the Association shows that in 23 states, the tax commission is periodically required to call a state meeting of assessing officers at which the tax commissioners discuss problems with local assessors and issue recommendations. Annual meetings are required in fourteen of these states, while in the others they are set at suitable intervals.

The assessor must be present or have an acceptable excuse for absence in at least eleven states. In Kentucky, for instance, he may be removed from office for deliberate failure to attend meetings.

In eight states, meetings are held at the option of the commission, but the assessors may be required to attend.

In twenty of the states where meetings are either mandatory or optional, special statutory provision is made for the payment of local assessors' traveling expenses. In most cases, this is paid by the county or city, but in several instances the state shares in the expense.

Seventeen states do not specifically provide even for occasional meetings between the tax commission and local assessors. However, in several of these states the tax commission on its own initiative arranges such conferences. Connecticut and Massachusetts are good examples of this procedure.

Homestead Tax Exemptions

ADOPTION in November, 1936, of constitutional amendments providing for homestead tax exemption in Arkansas, North Carolina and Utah brings the total number of states allowing this "subsidy" to home-owners to ten, according to a survey made by Robert M. Paige, Secretary of the Governmental Research Association.

Florida, Louisiana, Texas, Mississippi, Minnesota, Oklahoma and West Virginia are the other states which allow partial or almost complete homestead tax exemption. In Oklahoma, voters approved an amendment to the constitution last year permitting state legislation exempting homesteads from taxation, and the 1937 session of the Legislature is expected to pass a homestead exemption measure.

The Florida amendment, first effective in 1935, provides the most generous homestead exemption—$5,000. Under the Federal Constitution, however, neither the Florida measure nor any other homestead exemption provision can exempt homesteads from levies necessary to retire debt incurred prior to its enactment.

Louisiana's exemption measure, passed in 1934, authorizes the exemption of homesteads up to the first $2,000 of assessed value, but makes two important exceptions: municipal governments except the city of New Orleans may continue to tax homes, and the amount of the exemption from state and other local government property taxes on any particular year is determined by the money available for replacement purposes in the property tax relief fund. Texas and Mississippi exempt homesteads from state property tax levies only. Minnesota and West Virginia give homesteads a preferential status, subjecting them to a lower rate of taxation than non-homestead property.

All three of the homestead tax exemption measures adopted in November are permissive only and will not become effective until the legislatures of the states have acted. In Arkansas the exemption applies only to the property taxes of the state government. In North Carolina and Utah the exemption will affect local as well as the state governments. The amount of the exemption may be as much as $2,500 in Arkansas, $2,000 in Utah and $1,000 in North Carolina.

"There are apparently many persons who believe that home-ownership should be encouraged by governments, by subsidies if necessary," says Mr. Paige. In his opinion, however, those who favor state subsidies to present and future home-owners should find some other way than tax exemption to grant such subsidies. He points out that tax exemptions are authorized by state governments, but in most cases local governments must make up the revenue so lost, and this is much more difficult for some jurisdictions than for others. Furthermore, he adds, "a subsidy in the form of tax exemption to all homes is not closely related to the need of the home-owners; its exact amount cannot be determined because of shifting and capitalization; it is concealed and is not suspected by those who are paying for the exemption in higher taxes; it is continuing, and not subject to periodic review by legislative bodies; and it is questionable whether it is sufficient to have much effect one way or another on future trends in home ownership."

Citizen Cooperation in Re-Zoning

NEED for voluntary cooperation of property owners to make city land zoning and rehabilitation of blighted areas effective is emphasized by Walter Blucher, Executive Director of the American Society of Planning Officials, in connection with current attempts of some cities to modernize their zoning ordinances. "Private property owners can be very helpful in instigating action for rezoning," Mr. Blucher says, "although they should leave the decision on how it should be done with the city's zoning or planning commission."

Mr. Blucher cites the recent agreement of New York property owners in a 146-block section of Manhattan to have rezoned for residence and other use an area that has been over-zoned for commercial purposes or zoned as unrestricted. Owners of 1,395 parcels of property in the area have signed petitions approving the re-zoning plan, made after a two-year study by the Regional Plan Association, which increases zoned land for residential use to 22 per cent of the total area, instead of 6 per cent as at present, and decreases the amount of unrestricted land. Without the cooperation displayed by these property owners, Mr. Blucher points out, this particular section of the city would be unable to take even the first step toward re-defining its land needs for business, industrial and residence purposes, which have changed greatly since the original zoning ordinance was drafted.

Many cities are revising their zoning ordinances to fit present needs. Portland, Ore., for example, over a year ago made large-scale changes in its zoning plan. The City Planning Commission of Providence, R. I., has recommended similar action.

"Many, if not the majority, of the 1,200-odd zoning ordinances now in use in the United States no longer serve the purposes for which they were intended," says Mr. Blucher. "Almost without exception, they provide too great a quantity of commercial and industrial property and far too intensive a use of residential property. Much of the so-called zoning was arbitrarily arrived at and bears no relation to those needs and special problems which are peculiar to each city and are ever-changing. False zoning has hindered many cities by holding out promises which would never have been made had the facts been known. Excessive zoning for business, for example, has encouraged some owners to convert residential property prematurely. Neglected properties

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• Joy announces a unit of advanced design for the speedy and efficient removal of snow from city streets and highways.

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This loader, like the highly successful loaders in the mining field, features the Joy patented gathering mechanism. This and many other tried and proved principles of Joy design offer rapid, low-cost snow removal.

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Do you mention THE AMERICAN CITY? Please do.

on the fringes of such areas become blighted, and land is purchased or held for speculative purposes which are doomed at the outset."

Wherever re-zoning is done, Mr. Blucher points out, "some property owners are bound to be disappointed in having their land designated for a use they feel will bring a lower price than the value they would place on it. It is necessary for them to realize, however, that if they 'hold out' to block the whole scheme, they are doing themselves more harm than good, since the whole community suffers thereby."

Cost Accounting to Account for Public Works Cost

THE value of a comprehensive cost accounting system to the municipal public works director, who is responsible for providing vital community services in the most efficient and effective manner, is stressed by Frank W. Herring, editor of the *Public Works Engineers' News Letter*, which is issued jointly by the American Society of Municipal Engineers and the International Association of Public Works Officials. This fact is especially clear at budget-making time, Mr. Herring finds, when the public works director is most aware of the difficulties of working in the dark—not knowing how much public works operations are costing, or how their costs compare with those of other cities.

Answers to these questions can be obtained only from good cost systems, says Mr. Herring, who points out that there are extremely few cost data available on municipal public works operations, "to say nothing of data capable of comparing from city to city."

Good cost systems embody three fundamental items, he explains: "First, costs are computed in terms of units of accomplishment. For example, they show how much it costs to resurface a square yard of asphalt pavement. Second, they are for operations still being carried on. From them the administrator can determine whether the work is running under or over his work-program estimates. Only in this way can he appraise operations efficiency, without an undue amount of time-consuming, personal job supervision. The cost of carrying on some operation, made known half a year after the operation has been completed, may be good material for an annual report, but is of little help in controlling operating methods. And, finally, costs are reported on a uniform basis. This means that a given operation has its costs broken down always into the same units, which include all of the cost elements."

A standardization of these elements from city to city would allow costs on similar projects to be compared, and more efficient methods recognized, Mr. Herring comments. "Not until unit cost figures, reported currently and on a uniform basis, are widely available can efficiency and economy in public works operations be raised to a maximum.

Juvenile Tradesmen

NEWSBOYS, bootblacks and other juvenile street tradesmen in Cincinnati are protected for their own good through a unique regulatory system now being perfected by the city's Department of Public Welfare, according to *Public Management*, official magazine of the International City Managers' Association. Each company hiring boys who come under the municipal child labor ordinance submits a personnel list at the beginning of each year to the Juvenile Street Trades Section of the public welfare department. One section of this division works with the Board of Education and passes on the eligibility of the child. The test includes a physical examination, survey of scholastic records and proof of age. The enforcement agency is located in the city hall.

Enforcement of the ordinance differs in procedure from usual policing methods in that a case-work approach is used, enlisting the cooperation of the companies hiring street traders, the welfare agencies in the city and the Board of Education. Reports of non-observance come through visiting teachers, truant officers, school principals, social workers and individuals interested in juveniles. Investigators of the Department of Public Welfare also help keep check. All violations are taken up immediately with the boys' employer. If the violation is repeated, the parents and the boy are contacted, and if it is again repeated, he is blacklisted for future employment. If any violations are directly traced to the home, however, and it is found that a parent is forcing the child to sell in the evening in the prohibited district while under age, without permit, the Welfare Department clears the complaint with the private social agencies, and it is corrected. In several cases boys have been taken from undersirable homes and placed in foster homes, and parents have been turned over to the Humane Society for censure and supervision.

The close contact with social agencies has made it possible to obtain vacations, clothing and club memberships for many of the street traders, according to the magazine.

The Merit System

CAN local governments afford to go without the services of competent personnel technicans to hire, classify and train their employees? Not if they follow sound business tactics, according to a check made by the Civil Service Assembly of the United States and Canada, comparing total expenditures of half a dozen cities with the amounts spent on wages and salaries of employees.

The average expenditure for employee services made by these cities was approximately 62 per cent of their entire annual budgets for municipal services. In Saginaw, Mich., the figure was 52.7 per cent; in Fort Worth, Texas, and Los Angeles, it was 59 per cent; in Dallas, 60 per cent; and in Cincinnati, 63.39 per cent.

For Fort Wayne, Ind., it was recently found that 78 per cent of the whole budget is applied to the wages and salaries of city employees. In the case of the public schools, 87 per cent of the annual appropriation goes for this purpose, while new equipment and fixed charges amount to about 2½ per cent, and coal and fuel to heat the buildings, to 10 per cent. Other departments of the government—public health, public safety, public works and finance—spend approximately 80 per cent of their money for employee services.

Since salaries and wages for employee services make up such a large percentage of city government costs, points out G. Lyle Belsley, Executive Director of the Civil Service Assembly, it is obviously to the financial advantage of cities to install a merit system. A sound merit system utilizes all the principles of the most efficiently run businesses. It advertises widely to secure the best applicants for positions. It employs the best qualified man for the job, regardless of whether he is a "home town boy," and gives him special retraining courses on the job. It rewards the successful and best employees through pay raises and promotions and eliminates the unfit and weak through carefully analyzed service ratings. Through adequate, actuarially sound pension plans it insures the security of the employee, so that he is content to give all his service to the city.

Recent City Manager Appointments

DONALD C. EGBERT, former City Assessor for the past four years, has been appointed City Manager of Birmingham, Mich., to succeed James W. Parry, who has resigned to accept the position of Director of Training for the Michigan Municipal League.

On November 23, W. H. Pritchett, former County Clerk of Muskogee County, was selected to succeed S. P. Mann as City Manager of Muskogee, Okla.

C. M. Osborn, former Manager of East Cleveland, Ohio, Kenosha and Shortwood, Wis., Wilmette, Ill., and more recently State Engineer for PWA in Illinois, was appointed City Manager of Kenilworth, Ill., on December 8 to fill the vacancy created by F. L. Streed's resignation.

Frank L. Seymour, former City Manager of Bettendorf and Red Oak, Iowa, recently was appointed City Manager of El Dorado, Kans., to succeed F. E. Schide.

John Harrell, former Clerk of the Superior Court of Dodge County, was appointed City Manager of Eastman, Ga., on December 8, to succeed M. C. Edwards.

Will White, former County Tax Commissioner, on December 10 was appointed to succeed the late James J. O'Brien as City Manager of Lexington, Ky. His appointment becomes effective January 2.

CLARENCE E. RIDLEY,
Executive Director, International City Managers' Association.

Clark Avenue, looking toward 14th Street. Old granite blocks re-surfaced with Hot Mix Asphaltic Concrete

Locust Street from Leonard Avenue. Re-surfaced with Hot Mix Asphaltic Concrete.

Eighth St. looking toward Chouteau Ave. Very rough granite block covered with Hot Mix Asphaltic Concrete using a minimum of ¾" thickness.

How St. Louis re-surfaced 85 miles of streets with ASPHALT at LOW COST

A total of 1,800,000 square yards of pavement has been re-surfaced in St. Louis during the past three years with *asphalt*. That's equivalent to 85 miles of street with a 36-foot width.

In carrying out this re-surfacing program, the engineers had to consider several essential factors. First—*Economy*, due to a limited budget and the large amount of re-surfacing involved. Second—*Safety*, by providing a non-skid, non-glare surface. Third—*Durability*, under heavy traffic demands. And fourth—*Quick Application*, to avoid interference with traffic.

The Standard Oil Company (Indiana) which furnished most of the asphalt for this work, is, of course, pleased that the St. Louis Engineers approved its material and found it satisfactory in all respects.

Here is dramatic proof of the adaptability of asphalt—proof of its economy, safety, durability and quick application possibilities! Let a representative from *your* local Standard Oil office talk over *your* paving problems with you. This service is without obligation or cost—yours for the asking—and it may very readily be an economical solution to all your paving needs. Phone at any time. Take advantage of Standard's long years of experience in every kind of paving problem.

Here's What Happened in St. Louis

A large amount of re-surfacing was placed over sheet asphalt. A special mix was used, consisting of a hot mix at 250° F. using 95% Lead Belt Chat and 5% 85-100 penetration Asphalt Cement. This averaged 60 pounds to the square yard.

In re-surfacing the granite or brick pavement the same mix was used, requiring 125 pounds per square yard. There are 16 miles of this type of pavement on Broadway.

This work was carried out under the personal direction and supervision of Frank J. McDevitt, Director of Streets and Sewers, City of St. Louis.

New surface was able to bear traffic immediately after compacting!

A survey through the bus companies and taxi cab drivers brought enthusiastic praise of three features of the re-surfaced pavement: *non-skid, non-glare* and *freedom from tire noise.*

About 100,000 square yards of re-surfacing was done at night from 9 PM to 4 AM. This night work was done on heavy traffic streets with portable stands, using auto headlights. The record for re-surfacing in one night was 2500 square yards, using 12 men.

No seal coat was used on any of this work.

Copr. 1937, Standard Oil Co.

Asphalt for every purpose

STANDARD OIL COMPANY

Prepared by
FRANK B. WILLIAMS
Author of "The Law of
City Planning and Zoning"

Zoning and Planning Notes

From Data collected
by the Zoning Committee
of New York
(233 Broadway)

Private Covenants—Residential Use

ALABAMA.—*Virgin v. Garrett*, 169 S. 711 (Supreme Court, June 18, 1936).—Unless there is specific language such as "for the use of one family" or "of the type now prevailing," or other specific limitation, the general words, such as "dwelling houses," in a private restriction on land, do not limit to dwelling houses of the type prevailing at the time of the execution of the covenant, but include any structures used for residential purposes as developed by changing conditions, such as apartment houses.

Zoning Notice

CALIFORNIA.—*Gilgert v. Stockton Port District*, 60 Pac. 2d, 817 (Supreme Court, September 15, 1936).—A statute relating to the organization of port districts, attempting to confer authority to zone property within the boundaries of the district, which makes no provision for adequate notice and hearing of proposed zoning ordinances, is unconstitutional.

Zoning deprives certain owners, for the public good, of uses of their property to which it might otherwise be put; and notice is a substantial right to which they are entitled. The property owner is entitled to his "day in court," which he loses if he does not get notice.

EDITOR'S NOTE.—For other cases with regard to notice, see the Arkansas case of *City of Benton v. Phillips*, with editor's note, in our Zoning and Planning Notes for March, 1936.

Streets — Obstructions

CALIFORNIA.—*Marshall v. Standard Oil Co. of California*, 61 Pac. 2d, 520 (District Court of Appeal, Third District, October 9, 1936).—In determining whether a city could be restrained from drilling for oil on land conveyed to the city to be used exclusively for street purposes, and which was so used, any monetary benefit which the city might receive from the operation of the oil wells on this land could not be considered.

Livery Stable—Nuisance —Repairs

CALIFORNIA.—*People v. Ryan*, 61 Pac. 2d, 360 (District Court of Appeal, First District, Division 2, October 9, 1936).—A livery stable in a residential section cannot be repaired to remove the objection that it is a nuisance by reason of its use and dilapidated condition, the structural defects and the conduct and management of the building being so interrelated that they cannot be separated, where the zoning ordinance permits such repair only if cost does not exceed 50 per cent of assessed value, and the assessed value of the stable was $1,350, and the estimate of the owner was that repairs would cost from $1,000 to $3,000.

Non-Conforming Use

NEW JERSEY.—*North American Building and Loan Association v. Board of Adjustment of City of New Brunswick*, 186 Atl. 727 (Supreme Court, September 10, 1936).*

Bernhardt, a contractor, owned a large building in which he stored trucks, sand and gravel used in his business. When the city adopted a zoning ordinance, in 1928, his business became a non-conforming use. The North American Building and Loan Association later acquired the building through foreclosure and leased the property to the Kraft Cheese Corporation in November, 1934. This corporation stored trucks and cheese in boxes and made their deliveries from this building.

A certificate of non-conforming use was denied by the Board of Adjustment to continue this use of the property, and the building association petitioned the Supreme Court of New Jersey to review this denial by the Board.

The decision of the Supreme Court stated in part:

"The use of the property was substantially the same at both periods, the only difference being in the materials stored and used, and these only in part. In both cases the building was used by the owner for the storage, use, and disposal of privately owned equipment and materials. To hold otherwise would be to say that a storage warehouse could not accommodate itself to the storage of materials differing from those existing in 1928, nor could it receive for such purposes new products possibly unknown at the earlier period. This would be a strained extension of the purposes of the legislation."

The action of the Board of Adjustment in denying the certificate was set aside.

*From the Zoning Notes of the Chicago Regional Planning Association.

Theaters—Licenses

NEW YORK.—*Matter of Goelet v. Moss, Commissioner of Licenses of the City of New York*, Appellate Division, reported in *New York Law Journal*, November 20, 1936, p. 1769.—This case in the Supreme Court was summarized in our Notes for November, 1936. On appeal to the Appellate Division, the decision below was reversed, the head note to the case in the *Law Journal* saying:

"It is not within the discretion of the Commissioner of Licenses of the city of New York to refuse a license for a moving picture theater in an area not restricted against such use by a zoning law on the ground that the moving picture theater would depreciate real estate values in the neighborhood. The only duty of the Commissioner of Licenses on an application for a theater license in the community is to consider the question from the standpoint of public health, safety and morals and not as a problem in city planning."

Cemeteries

NEW YORK.—*Moore v. United States Cremation Co. Lim.*, Appellate Division, reported in *New York Law Journal*, November 17, 1936, p. 1724.—This case, in the Supreme Court, was summarized in our Notes for May, 1936. In the upper Court, on appeal, that decision is reversed. This Court says that, below, the plaintiff was given a judgment preventing the defendant from using his land for a crematory and mortuary "on the theory in effect that a crematory was in fact a cemetery. The findings did not justify such a conclusion, and it was leguleian to grant such a judgment. This disposition of a dead body by burial and by cremation is entirely different, as is recognized by statute." The judgment below was therefore reversed.

A Great Planning Victory in the Courts

Our readers will remember the New York case of *Headley v. City of Rochester*, which in the Supreme Court was reported in our April, 1936, Notes, and in the Appellate Division was summarized in our Notes for November, 1936. This case was brought to test the validity of legislation for the establishment of official city plans. The decision in the Supreme Court upheld these plans so established in the Supreme Court, but in the Appellate Division the Supreme Court decision was unanimously overruled. We now get word from Albany that the Court of Appeals, the highest Court in the state of New York, has unanimously overruled the Appellate Division, thus sustaining the official plan laws. The text of the decision, not yet handed down by the Court, is awaited with great interest by city officials and city planners, with the hope that a great victory for city planning in this country has been achieved.

The Municipal Index for 1937 will contain a condensed subject index to Zoning and Planning Notes appearing in THE AMERICAN CITY during the year 1936.

Tires get a life-saving grip on CONCRETE

TRAFFIC SAFETY depends to a great extent on ability of cars to *stop quickly*. And that, in large part, depends on the pavement. Its surface must offer a safe, sure grip for tires, rain or shine. Yet this surface must not cause excessive tractive resistance or increase tire wear and fuel consumption.

Skid tests show that tires get their best grip on non-yielding surfaces of a gritty, sand-like texture. And that describes concrete perfectly! The partially exposed sand grains in the pavement provide a *permanent* uniformly gritty surface that makes concrete the safe road, wet or dry.

TRUCK DRIVERS VOTE FOR CONCRETE

The Central Motor Freight Association's safety committee questioned 38 experienced drivers of member companies. These men aggregated 319 years and 11,863,000 miles of experience. Here is how they voted: 33 men named concrete the easiest pavement to drive on, 35 named it the safest pavement; and 37 named it the safest for night driving!

Design your roads and streets with safe, economical, permanent concrete

PORTLAND CEMENT ASSOCIATION

Dept. A1-4, 33 West Grand Avenue, Chicago, Illinois

To eliminate what was termed one of the world's worst skid traps, concrete was recently selected for repaving New York's Queensboro bridge. 100,000 vehicles a day pass over this busiest of roadways—and, thanks to concrete, they may pass *safely*. Above view shows one lane repaved. City test cars proved that, at only 15 miles an hour, the stopping distance on wet concrete was from 14 to 47 feet less than any other pavements tested. Resurfacing designed by Dept. of Plants & Structures, City of New York, under Commissioner F. J. H. Kracke. Queensboro Bridge paving supervised by Samuel Hamburger; Williamsburg Bridge, also being resurfaced, supervised by J. Frank Johnson.

●

Left: **a lightly broomed surface. *Right:* texture of concrete obtained by drawing a canvas belt across the finished surface. *(Both photos enlarged.)* Wet or dry, concrete grips tires surely and safely.**

During January we hope you will remember to mention THE AMERICAN CITY

The City's Legal Rights and Duties

Conducted by A. L. H. STREET, Attorney at Law

Accidents

Statute requiring notice to city of street or sidewalk accident claim held applicable whether defect relied on arose in discharge of a governmental or a proprietary function of the municipality (United States District Court, Western District of Tennessee: *Collins v. City of Memphis*, 16 Fed. Supp. 204).

City held not liable for injury to automobile passenger due to car striking drain depression in street underpass and being thrown against viaduct abutment (Kentucky Court of Appeals: *City of Louisville v. Redmon*, 96 S. W. 2d, 866).

City held not liable for negligence of CWA workers in demolishing municipal building (Louisiana Court of Appeal: *Todaro v. City of Shreveport*, 170 So. 356).

Statute requiring claim against city for street or accident to give city notice of "character of injury" held to merely require notice as to whether injury was to person or property and not to require specification of items of damage (Missouri Supreme Court: *David v. City of St. Louis*, 96 S. W. 2d, 353).

City held not liable for death of boy who fell from city's truck trailer used in hauling junk, the driver not knowing of the boy's trespassing presence on the trailer (Illinois Appellate Court, First District: *Michalik v. City of Chicago*, 4 N. E. 2d, 256).

City held not liable for injury to woman while leaving auditorium after attending public meeting, due to stumbling on steps in aisle when lights were prematurely turned off (Georgia Court of Appeals: *Roberts v. Mayor and Aldermen of City of Savannah*, 188 S. E. 39).

Bond Issues

Bonds authorized but not sold before adoption of constitutional tax limitation held not pre-existing debt within an exemption from the limitation (West Virginia Supreme Court of Appeals: *Zimmerman v. Town of New Martinsville*, 188 S. E. 124).

Boundaries

State held estopped to question validity of city's boundaries which state had recognized (Florida Supreme Court: *City of Winter Haven v. State*, 170 So. 100).

Claims

City held to have implied power to compromise bona fide claims against it, regardless of whether the claims might have been upheld in court (Minnesota Supreme Court: *Snyder v. City of St. Paul*, 267 N. W. 249).

Contracts

Municipal contracts need not be awarded on competitive bidding, in the absence of statutory or charter provision therefor (United States Circuit Court of Appeals, Ninth Circuit: *Nev-Cal Electric Securities Co. v. Imperial Irrigation District*, 85 Fed. 2d, 886).

City held not liable to prospective bidder for contract for representations made by department officials as to whether or not contract need be awarded after competitive bidding (Massachusetts Supreme Judicial Court: *Galassi Mosaic & Tile Co. v. City of Boston*, 4 N. E. 2d, 291).

Depositaries

City Treasurer held to have bound city to reduction of interest rate on deposits in municipal depositary by leaving funds there after notice from bank of such reduction (Minnesota Supreme Court: *City of Minneapolis v. First National Bank & Trust Co.*, 269 N. W. 521).

Food Inspection

Ordinance requiring inspection of bakery products imported from another state where the baker has complied with local health regulations, held void, the products being shipped in sealed packages and containers (United States District Court, District of Nevada: *Langendorf United Bakeries v. City of Reno*, 16 Fed. Supp. 442).

Home-Rule Charters

Under constitutional provisions reserving to the Legislature powers over matters of "state-wide concern," despite delegation to home-rule cities of powers over "local affairs," held that municipal regulation of the pay of policemen must yield to general statutes on the subject (Wisconsin Supreme Court: *Van Gilder v. City of Madison*, 267 N. W. 25) State law also held paramount on subject of organization of boards of police and fire commissioners (Same Court: *Logan v. City of Two Rivers*, 267 N. W. 36).

Intoxicating Liquors

Ordinance barring liquor sales between 10 P. M. and 6 A. M. held not invalid because exempting sales to hotel guests (Florida Supreme Court: *State v. Noel*, 169 So. 549).

Licenses

Wholesale dealers in intoxicating liquors held subject to requirement that municipal permit be obtained before making sales within city (Georgia Court of Appeals: *Collier v. State*, 187 S. E. 843).

$50 annual occupation tax against non-resident dry cleaners and only $5 against residents held void for unreasonable discrimination (Nebraska Supreme Court: *Speier's Laundry Co. v. City of Wilber*, 269 N. W. 119).

Troy, N. Y., ordinance licensing and regulating barbers upheld (Rensselaer, N. Y., County Court: *People v. Stiegler*, 290 N. Y. Supp. 732).

Home rule city held empowered to impose occupation taxes and regulations upon chattel mortgage and salary loan business (Oklahoma Criminal Court of Appeals: *Shinn v. Oklahoma City*, 61 Pac. 2d, 1126).

Municipal Utilities

Village operating electric plant held entitled to charge rates yielding reasonable profit the same as if it were a private corporation (New York Court of Appeals: *Village of Boonville v. Maltbie*, 4 N. E. 2d, 209).

Official Bonds

City Manager's fidelity bond held to cover all funds collected under color of his office, whether he was legally authorized to collect them or not (Florida Supreme Court: *City of Auburndale v. Nunn*, 169 So. 558).

City Treasurer's surety held liable for loss to pension fund due to failure of depositary bank, despite clause in bond purporting to exempt against liability for such losses (Arkansas Supreme Court: *Jones v. Hadfield*, 96 S. W. 2d, 959).

Official Investigations

Subpoena held to have properly issued under New Jersey statutes to compel deputy department director to appear before municipal investigating committee (New Jersey Supreme Court: *Wintermute v. Ellenstein*, 187 Atl. 764).

Official Resignations

Undated resignation exacted from appointee to municipal office before he had qualified held invalid, rendering ineffectual a later council resolution purporting to accept the resignation (New Jersey Supreme Court: *Dolphin v. Mayor and Council of Town of Kearny*, 181 Atl. 644).

Ordinances

Fact that ordinance was adopted by unanimous vote held properly proved by uncontradicted testimony of City Commissioner, in the absence of contrary showing by the Commissioners' minutes (Texas Court of Civil Appeals: *Mitchell v. City of Terrell*, 96 S. W. 2d, 556).

Pensions

Pension paid to retired fireman who had contributed percentage of salary to pension fund held not reducible constitutionally (Georgia Supreme Court: *Trotzier v. McElroy*, 186 S. E. 817).

Public Utilities

City held entitled to oust from streets electric company whose franchise had expired, although company held state certificate of convenience and necessity (Missouri Supreme Court: *State v. Missouri Utilities Co.*, 96 S. W. 2d, 607).

Town held entitled to reimbursement by gas company against liability to pedestrian who fell into a ditch in street that had been insufficiently refilled by company (Virginia Supreme Court of Appeals: *Commonwealth Public Service Corporation v. Town of Bluefield*, 187 S. E. 521).

Sewers

City held liable as for nuisance in so disposing of sewage as to cause annoyance, etc., to those residing nearby (Oklahoma Supreme Court: *Oklahoma City v. Eylar*, 61 Pac. 2d, 649).

Slot Machines

Ordinance requiring slot-machines to register each play held unreasonable and void (Florida Supreme Court: *Curtis v. Hutchingson*, 170 So. 133). Prohibition against operation excepting on certain floor levels also held void (same Court, same title: 170 So. 134). Prohibition against operation between 8 P. M. and 6 A. M. upheld (same Court, same title: 170 So. 135). But prohibition against operation between 12 noon and 1 P. M. held void (same Court, same title: 170 So. 136).

Streets

Railroad held not entitled to enjoin city from reopening street across right-of-way that had been vacated (United States Circuit Court of Appeals, Tenth Circuit: *City of Norton v. Lowden*, 84 Fed. 2d, 663).

Taxation

City's electric transmission lines extending into adjacent county held not taxable in such county, although competing with privately owned utility (Kansas Supreme Court: *State v. Smith*, 61 Pac. 2d, 897).

Bankruptcy Act held to give city preferred claim against bankrupt taxpayer's estate for unpaid sales tax, but only an unpreferred claim against estate of bankrupt who collected tax and failed to account for it to city (United States Circuit Court of Appeals, Second Circuit: *In re Lazaroff*, 84 Fed. 2d, 982).

Taxpayers' Suits

Taxpayers held without such interest as to entitle them to compel city to pay to firemen amounts allegedly deducted from their pay without legal authority (Georgia Supreme Court: *Nance v. Key*, 188 S. E. 32).

Traffic Regulations

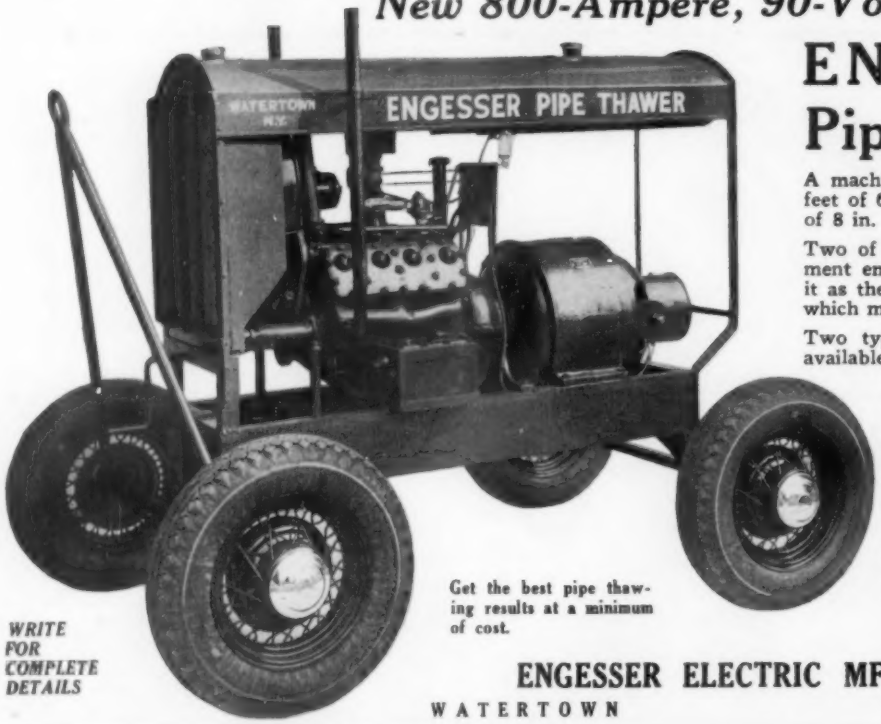
Ordinance requiring motor vehicles to be inspected semi-annually upheld (Illinois Supreme Court: *City of Evanston v. Wazau*, 4 N. E. 2d, 78).

Ordinance prohibiting solicitation of passengers for hire in park system upheld (Illinois Supreme Court: *Chicago Park District v. Lattipee*, 4 N. E. 2d, 86).

Water Supply

City held liable for typhoid death due to pollution of city drinking water (Vermont Supreme Court: *Boguski v. City of Winooski*, 187 Atl. 808).

A Modern
UP-TO-THE-MINUTE WATER DEPT. NECESSITY:
New 800-Ampere, 90-Volt



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Pipe Thawer

A machine capable of thawing 600 feet of 6 in. cast iron pipe, 350 feet of 8 in. and 250 feet of 10 in. pipe.

Two of the regular Water Department employees can easily operate it as the Ford V-8 is a motor with which most people are familiar.

Two types of mounting are now available. The standard machine mounted on three wheels for convenience in loading on the Water Department trucks, the three wheels giving three-point suspension to eliminate binding of bearings when machine does not set level; or the trailer type with four pneumatic tires, tow bar and protecting canopy, as pictured.

Get the best pipe thawing results at a minimum of cost.

WRITE FOR COMPLETE DETAILS

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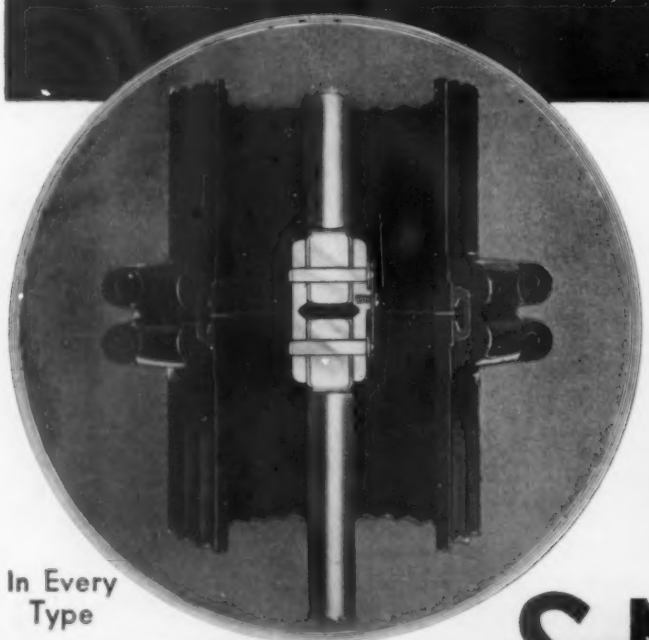


THE sections of the **PROTECTOP STANDPIPE** are joined by a frangible clamp which encloses a rubber gasket designed to eliminate all possibility of leakage. The hydrant stem is made in three sections, the central section being of cast iron amply strong to resist the strain of opening and closing but having a frangible point in line with the frangible point of the clamp.

After collision, the only parts needing replacement are the frangible standpipe clamp and the frangible cast iron stem section, the combined cost of both being approximately five dollars; and the time required to remove and replace the injured parts, which are held together with non-corrodible bolts, being not over fifteen minutes.

The hydrant valve, being of the compression type and guided throughout its travel, will remain closed. Even if open at the time of collision, it will instantly close, thus eliminating all danger of flooding.

A further advantage of the **PROTECTOP** Clamp is that the nozzles may be rotated to any desired position.

In Every Type

Designed to Break Only at One Place

In Every Size

SMITH
Protectop Hydrants

The A. P. Smith Mfg. Co., East Orange, N. J.

Municipal and Civic Publications

Prices quoted do not include postage, unless so stated

Street Construction

Asphalt Roads.—By Percy Edwin Spielmann, General Editor, The Road Makers' Library, and A. C. Hughes, County Surveyor for Hampshire, England. Published by Edward Arnold & Co. in London, England, and Longmans, Green & Co. in New York. 1936. 319 *pp.* $9.00 *from* THE AMERICAN CITY.

This volume is the fifth in The Road Makers' Library, the four previous books discussing road making and administration, the testing of bituminous mixtures, road aggregate, and highway and road traffic law. The present volume starts with an historical introduction discussing natural asphalt deposits in France, Germany, Italy, Switzerland and Trinidad. Part 2 is devoted to asphaltic bitumen and natural asphalt, Part 3 to bitumen mixtures, and Part 4 to types of aggregates, the relation between aggregates and the bitumen and various types of asphalt surfacing, their weaknesses and methods of correcting defects. Part 5 is devoted to laboratory investigations and tests. An excellent bibliography and an index complete the volume.

Municipal Government

American Municipal Association Proceedings, 1931-1935.—Prepared for publication by Public Administration Service. Published by the American Municipal Association, 850 E. 58th St., Chicago, Ill., 1936. *xv* + 828 *pp.* $7.00.

During the years of depression, many of our local governments would have been hopelessly lost in the confusion of tax delinquency and tax limitation if it had not been for the assistance of the Federal Government. The American Municipal Association was one of the forces that pressed upon the Federal Government to adopt the attitude that the depression was a national phenomenon meriting national financial assistance. Since 1930 the Association has done much toward improving local government through its establishment of a national federation of state leagues of municipalities. In 1935 over 6,000 cities had become members of leagues of municipalities in 30 of the 48 states.

This volume is a record of the proceedings and discussions of league directors and representatives in the annual conferences of the American Municipal Association from 1931 through 1935. Its contents could qualify as recent municipal history, revealing the great problems which have faced our cities during these five years of struggle. Not only speculations, but experience, proposals, and plans are given by men who have been on the action front. A few of the subjects discussed are: the social security program, Federal relief, low-cost housing, tax limitation laws, financial relations between Federal, state, and local governments, and centralized purchasing. Throughout the volume an increasing trend toward cooperation among cities in these matters can be traced.

Bitumen and Petroleum

Bitumen and Petroleum in Antiquity.—By R. J. Forbes, M.N.R.I.E. Published by E. J. Brill, Leiden, Netherlands, 1936. 109 *pp.* $1.25.

Reliable information on the use of bituminous material in antiquity is scarce and scattered. It was used to a considerable extent by the early Egyptians and other ancient civilizations, but with the coming of Hellenism its use gradually slipped out of existence. During many centuries, throughout the Middle Ages and the Renaissance, the knowledge of the properties of this material slumbered or degenerated, and bitumen was remembered only for its supposed magical or medicinal properties. It was not rediscovered until 1721, when the Greek doctor Eyrinis d'Eyrinis rediscovered the Neuchâtel rock asphalt deposit and became the originator of the modern asphalt industry. Mr. Forbes' purpose in writing this booklet was to present in condensed form all the most reliable information available on the early days of the petroleum industry. He presents many new analyses of ancient mastics, which is a valuable contribution to the general study.

Water and Sewage Laboratory Methods

Laboratory Manual for Chemical and Bacterial Analysis of Water and Sewage.—By Frank R. Theroux, Associate Professor of Civil Engineering, Edward F. Eldridge, Engineering Research Assistant, and W. LeRoy Mallmann, Associate Professor of Bacteriology, all of the Michigan State College. McGraw-Hill Book Company, Inc., New York. Second edition, 1936. *X* + 228 *pp.* $2.50 *from* THE AMERICAN CITY.

The first two of the authors were responsible for the first edition of this practical laboratory manual, which was devoted solely to the chemical analysis of water and sewage. It was written carefully, simply and in terms readily understood by the average water-works and sewage-works operator who had not had the advantage of an extensive technical training in water and sewage laboratory problems. The second edition carries on the worthy tradition of the first, but includes bacterial methods of analysis described in the same manner as were the methods of chemical analysis. Certain re-wording of the earlier text clarifies the determinations still further.

The authors call particular attention to the fact that the methods of analysis and the discussions in this volume are not offered as a substitute for the Standard Methods of Water Analysis of the American Public Health Association, but as a collateral or companion text to aid those whose training in chemistry and bacteriology is limited, and those who need additional explanations of the procedure and technique.

Finance

Central and Local Finance in Germany and England.—By Mabel Newcomer, Professor of Economics and Chairman of the Department at Vassar College. Columbia University Press, New York, 1937. *xi* + 381 *pp.* $3.50 *from* THE AMERICAN CITY.

Separation of sources of revenue tends to disappear as the costs of government increase. Central governments step into the tax picture more and more, and often leave the local governments without sufficient support. Then shared taxes or grants-in-aid become necessary, or the central government must take over some of the local functions. This trend is becoming increasingly noticeable in the United States, although it is a relatively new development. Other nations have already traveled far along this path. Both Germany and England have developed highly centralized tax systems and have reduced local tax powers materially since the war. In compensation, the central government of Germany has built up an elaborate system of shared taxes, and the English government has increased its grants-in-aid substantially.

This book is concerned with an account of the German and English methods of transferring revenues from central to local treasuries, in the hope that it will throw some light on the problem in this country. Five years of depression have increased our transfers from central to local governments from $1,000,000,000 to $4,000,000,000, and the introduction of adequate controls is becoming increasingly urgent.

Municipal Finance

The Municipal Finance Officers Association is interested in helping progressive finance officials to prepare for the increasing responsibilities of their positions. Consequently, they have published "A Reading and Study Program for Municipal Finance Officers," which is a carefully selected list of references to books, pamphlets and magazine articles on municipal accounting and finance. The material is grouped by topics, such as organization, revenues, tax collecting, budgeting, general accounting, and many others. The official can make a general study by selecting one or two references under each topic, or he can concentrate on one phase of the subject. 24 pp. 35c. (Apply to Municipal Finance Officers' Assn., 850 E. 58th St., Chicago, Ill.)

Sewerage

Sewerage and Sewage Treatment.—By W. A. Hardenbergh, Member, American Society of Civil Engineers; Vice-President, Public Works Magazine, Lt.-Col., Sanitary Res., U. S. Army. International Textbook Company, Scranton, Pa. 1936. *xi* + 396 *pp.* $3.50 *from* THE AMERICAN CITY.

This text for students aims to present a comprehensive and balanced picture of the subject of sewerage and sewage treatment to be used as a foundation for more detailed study.

Milk Control

The Legal Aspects of Milk Control.—By James A. Tobey, Dr. P.H. Published by International Association of Milk Dealers, 309 West Jackson Boulevard, Chicago, Ill. 102 *pp.* $3.00.

The author has been gathering data and publishing periodic reports on the legal aspects of milk control since 1924. Milk, being one of our most important foods in America, has been subjected to considerable governmental control ever since the first Massachusetts act of 1856 prohibiting its adulteration in that state. We have gradually developed extensive legislation covering all phases of production, handling, processing, distribution, and sale of milk and dairy products. Dr. Tobey's book has been set up as a guide to this body of law for lawyers, members of the dairy industry, health officers, food and drug officials, and any other interested persons who may have practical use for it.

Planning

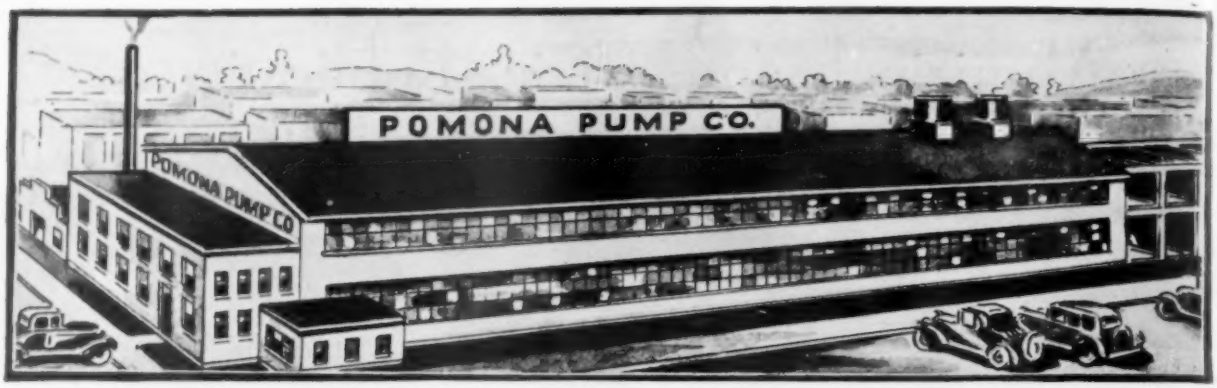
Under the stimulation of the National Resources Committee, the PWA, FERA, and WPA, the Governors of 46 states have set up State Planning Boards. The District of Columbia and 34 of the states have established their boards on a statutory basis, and Louisiana and the Territory of Alaska have passed laws that should soon lead to appointments. This publication, entitled "Status of Organization of Planning Districts and State Planning Boards," brings up to date "The State Planning Report of the National Resources Board," including information up to June 15, 1935, on the establishment and membership of the organizations in each state. This tabulation, revised to December 15, 1936, gives the dates of appointment of the original and all succeeding boards in each state, a list of the members of each board, and the address of each headquarters. 31 pp. (Apply to the National Resources Committee, Interior Bldg., Washington, D. C.)

Roadside Regulation

The American Civic Association, early in 1935, was provided by Mrs. John D. Rockefeller, Jr., with funds to develop a program for which interested citizens in all parts of the country might work to protect roadsides from the widespread blight of ugliness. As a result of their studies, the appointed committee has presented a preliminary progress report to the members of the American Planning and Civic Association for their consideration and criticism. The report appears in *Planning Broadcasts* for October-November, 1936. Five types of regulation are suggested, no one of which is sufficient in itself to solve the problem, but which, supplementing each other in a comprehensive program, should bring great improvement in the appearance of our highways over a period of years. The State Highway Departments and the State Planning Boards should be pivotal agencies in this movement. 15 pp. (Apply to American Planning and Civic Association, 901 Union Trust Bldg., Washington, D. C.)

Bond Dealers

The 1936-1937 edition of the Directory of Municipal Bond Dealers of the United States is now available. It contains an alphabetical list of municipal bond dealers and a list of municipal bond attorneys in all U. S. cities. 368 pp. 50c. (Apply to the Bond Buyer, 67 Pearl St., New York.)



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Garbage Disposal

"The Disposal of Garbage in the Sewerage System," by Lewis V. Carpenter, Albert C. Rogel, and Bernard Grabois, is an article reprinted from the *Sewage Works Journal*, Vol. VIII, No. 5, September, 1936. A great deal of garbage has long been entering the sewerage system through the sink strainer and often through the toilet, but today we see the marketing of small and large grinders to be used in kitchen sinks or in central disposal stations which are designed to reduce all garbage to a consistency which can be flushed into the sewers. However, enough data are not yet available to warrant indiscriminate dumping of all garbage into the sewer without investigating the effect on the sewers, the sewage-disposal plant and the streams. This article reports some experimental work on the subject. 14 pp. (Apply to the College of Engineering, New York University, New York.)

Planning

"Montclair Matters" is a readable bulletin of municipal affairs, edited by Harold Braddock. The November, 1936, issue is entitled "Town Planning in Montclair." Montclair has the usual problems of decadence and blight and of increasing traffic congestion. But, in addition, the completion of the new Mid Town Hudson River Tunnel is apt to stimulate a future growth of the town which presents its own problems of how and where it can grow to the best advantage of the community. Thirty years ago John Nolen drew up a splendid set of recommendations for Montclair which would have cost a relatively small sum to carry out at that time. But certain property owners led an "economy campaign" which defeated the plan. Since that time there have been an Advisory Plan Commission and a Zoning Commission, but it was not until 1930 that an active Town Planning Board was set up. A flexible master plan has been drawn up, bad living and traffic conditions have been surveyed, and recommendations for their improvement have been made. 12 pp. 25c. (Apply to the Montclair Association, Montclair, N. J.)

Condemnation

"Use of the Power of Eminent Domain in Slum Reclamation" is the title of an article by John Ihlder and Maurice V. Brooks appearing in the *Journal of Land and Public Utility Economics* for November, 1936. Does "public use" mean use or right of use on the part of the public or some limited part of the public, or is it equivalent to public benefit, utility or advantage? The Alley Dwelling Act, applicable to the inhabited alleys of Washington, D. C., is in harmony with the principle that the conversion of sites to uses that will serve the public interest would be a "public use" irrespective of the particular use to which the area may subsequently be put. The Alley Dwelling Authority has the power to condemn any land in or adjacent to an inhabited alley; replant it, install any new utilities, and demolish or alter existing buildings; and to lease, rent, maintain, equip, manage, exchange, sell, or convey any such lands, buildings or structures. The use of the police power has not been effective in dealing with decadent areas in our cities. But the power of eminent domain has tremendous possibilities through the furtherance of public use to include the reclamation of slums and blighted areas which are a social and economic liability to any community. (Apply to Journal of Land and Public Utility Economics, Northwestern University, Evanston, Ill.)

Housing

The Housing Division of PWA has prepared Housing Bulletin No. 2, entitled "Urban Housing." Part I deals with the background of the housing movement, outlining the present living conditions which have established a need for housing activity. Part II describes the Housing Division of PWA, its purpose, policy, function, and structure. Part III is a history of government activity in housing from war housing to the final program in effect today. Part IV presents the story of the procedure on this final program. In addition to these four main sections, the pamphlet has three appendices, one on the development of the housing movement in both Europe and America, the second concerning housing legislation, and the third devoting a descriptive paragraph to each of the Housing Division's projects. 105 pp. 20c. (Apply to Supt. of Documents, Washington, D. C.)

Traffic

Motor Vehicle Speeds on Connecticut Highways.—By Charles J. Tilden, assisted by Daniel Luzon Morris, Thomas M. C. Martin and Evicson W. Russell. Published by The Committee on Transportation, Yale University. 1936. 51 *pp. Tables, maps, charts.*

This study, made jointly by the Committee on Transportation of Yale University, the Connecticut State Highway Department, and the U. S. Bureau of Public Roads, is believed to be the first large-scale accurate study of the speeds at which motor vehicles move under a variety of conditions on typical highways. Many of the stations at which the studies were made were located very close to cities.

The purpose of the study was to secure factual data which will help in the control of traffic, the building of highways, and to some extent in the design of motor vehicles. Among the facts indicated by the various tables, the following are of special interest. Table I shows the variations in speed with the seasons of the year: passenger cars move fastest in winter and lowest in summer; buses do the same, but trucks move slightly faster in spring, and slower in summer. Table II shows that speeds tend to be higher on two-lane concrete roads than on any other type; which may result from the use of this road on comparatively long stretches of highway through sparsely settled districts where speeds are naturally higher. A comparison of road types could be made only if roads of different character passed through the same area. From Table III one learns the comparatively small reduction in percentage of speed due to extremely adverse weather conditions; and also the automatic speed check due to chains.

Among other interesting data, we note how much faster out-of-state cars may be expected to go; how motorists in Connecticut take curves and cross railroad grade crossings; and that motorists not accompanied by back-seat drivers tend to move somewhat faster than those traveling alone.

PAUL L. GREEN.

Water Pollution

Anu nusual epidemic of amebic dysentery had its origin in Chicago during the first summer of the Century of Progress Exposition in 1933. The center of trouble appeared to be two neighboring large downtown hotels. After considerable investigation by the Board of Health following official reports of increasing numbers of cases, the conclusion was reached that the spread of the epidemic was through water polluted in one of the hotels. Two sources of pollution were discovered: two cross-connections which joined an overhead sewer to condenser-water discharge pipes, and an old rotting wooden plug in an overhead sewer which permitted leakage into the cooled drinking-water tank below. The National Institute of Health Bulletin No. 166, entitled "Epidemic Amebic Dysentery, the Chicago Outbreak of 1933," is a full report of this epidemic and its causes. 187 pp. 20c. (Apply to Superintendent of Documents, Washington, D. C.)

Planning

The San Diego County Planning Commission was requested by the legislative body to prepare a set of regulations governing the subdivision of unincorporated areas in San Diego County. This Commission prepared a tentative draft, and called in engineers, realtors, title company representatives, and heads of the various county departments for their comments and criticisms on the tentative outline. After numerous meetings and public hearings, a final draft was agreed upon and recommended to the legislative body for adoption. At the final hearing before the legislative group, this "Subdivision Ordinance" was passed and adopted without protest. 23 pp. 10c. (Apply to the San Diego County Planning Commission, Park Administration Bldg., Balboa Park, San Diego, Calif.)

Recreation

The Children's Bureau of the U. S. Department of Labor has published a "Handbook for Recreation Leaders," by Ella Gardner. It should be of great help in planning programs and in selecting games and other recreation material in the home and with club and community groups. There are classified indexes at the end of the bulletin, prepared to assist those who are inexperienced in program building. 121 pp. 15c. Bureau Publication No. 231. (Apply to the Superintendent of Documents, Washington, D. C.)

Motor Accident Liability

The latest issue of *Law and Contemporary Problems* deals with the problem of "Financial Protection for the Motor Accident Victim." An introductory article makes clear the human costs of the automobile accident, pointing out that although monetary compensation may replace property, it can only mitigate to some degree the sufferings of the injured. Two succeeding articles describe some of the effects of the automobile accident upon the rules of tort law and upon practices in tort litigation. The remaining articles deal with the three types of measures designed to assure the victim of monetary compensation regardless of the financial status of the person liable. The so-called financial responsibility law and compulsory liability insurance are found throughout Canada and United States, and in Massachusetts and Great Britain respectively. The automobile accident compensation plan has not been applied anywhere as yet, but is being widely discussed. 463 pp. 75c per number. (Apply to Law and Contemporary Problems, Duke Station, Durham, N. C.)

Local Budgets

The Princeton Local Government Survey has started a series of six "Pocket Reports" with "The Budget Process in Local Government." New Jersey's present form and content of local budgets have been found to be inadequate for proper fiscal management. It is stated that records and accounting methods are antiquated, current borrowing is constantly a menace to current services, and expenditure management is left too much to the interest and ingenuity of local officers. Instead, there should be genuine local fiscal planning under a suitable state agency. New systems of accounting should be introduced. A "cash basis" toward remedying the floating debt situation would be exceedingly helpful, and the pre-audit of local expenditures should become a routine operation in local government. The recommended state agency should be able to devote full time to this important matter, treating the local fiscal process as a whole, codifying its law, and having real supervisory authority. 37 pp. (Apply to Princeton Local Government Survey, Princeton University, Princeton, N. J.)

Model Laws

The National Municipal League has assembled nine of its model laws in a single bound volume entitled "Model Laws" to be sold at a considerable saving. These model laws are of value to legislators in the presentation of the most advanced thought on forms and methods of local government and as an indicator of future trends. The volume includes: Model Bond Law, Model Budget Law, Model County Manager Law, Model Registration System, Model State Constitution, Model Real Property Tax Collection Law, Principles of a Model County Government, Model Election Administration System, Liquor Control: Principles, Model Law. $2.50; $2.00 each for more than 10. "Model City Charter" available at 50c with an order for "Model Laws." (Apply to National Municipal League, 309 E. 34th St., New York.)

Regional Planning

Bryant Hall, Research Engineer of the Regional Planning Commission of the County of Los Angeles, has prepared "A Decimal Classification of the Urban and Rural Uses of Land." It is prepared for use-of-property maps in metropolitan regions, including rural, suburban, and urban uses. The main classifications employed are: vacant, open use, farming, residence, commerce, industry, utility, institution, recreation, problem use. 36 pp. (Apply to Los Angeles County Regional Planning Commission, Los Angeles, Calif.)

Government and Administration

The Milwaukee Government Service League publishes an attractive illustrated bulletin, *Municipal Government Service*, designed to inform and interest those who are engaged in the local city service. It gives many items of personal news regarding municipal officials and employees and includes articles descriptive of municipal undertakings and activities. The illustrations add greatly to the charm of this well-executed publication. 16 pp. Single copies, 25c; yearly subscription, $1.00. (Apply to Robert W. Hansen, Editor-in-chief, 234 Fine Arts Bldg., 125 E. Wells St., Milwaukee, Wis.)

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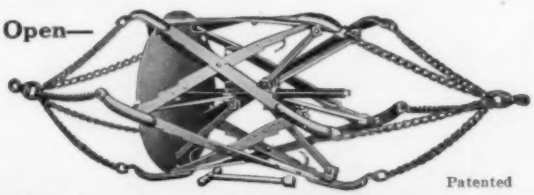

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Police Intelligence

The Detroit Police Department has conducted, under well-qualified persons, over a term of years, four experiments in the mental examination of police officers. A record entitled "Experiments in the Mental Testing of Detroit Policemen" has just been prepared by the Detroit Bureau of Governmental Research, Inc. The history of each experiment is presented along with the different conclusions reached. These accounts are not offered as the last word in this field, but merely to indicate the increasing scope for experimentation by police officers and students of psychological measurement. vi + 54 pp. (Apply to the Detroit Bureau of Governmental Research, Inc., 4841 Second Blvd., Detroit, Mich.)

Other Reports Received

ALLIANCE, NEBR.—Annual Report, 1935. 37 pp.

BINGHAMTON, N. Y.—"Municipal Facts, 1935." 80 pp.

CHICAGO, ILL.—Annual Message of Clayton F. Smith, President, Board of Commissioners of Cook County and President of the Board of Forest Preserve Commissioners of Cook County, 1936. 159 pp.

CHICAGO, ILL.—Annual Report, Department of Public Works, Annual Report, Department of Streets and Electricity, year ending December 31, 1935. 435 pp.

NEW JERSEY.—"Program for State Ownership of Park and Forest Land in New Jersey." 30 pp.

NEW YORK STATE.—Annual Report, Department of Health, 1935. 279 pp.

PASADENA, CALIF.—Annual Report, Water Department, 1935-1936. 70 pp.

RALEIGH, N. C.—"Recommendations Concerning Liquor Control in North Carolina." 19 pp.

RALEIGH, N. C.—"Proposed Amendments to State Revenue Act Removing Restrictions on Municipal Power to Levy Privilege License Taxes." 4 pp.

Conventions -- When and Where

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

JANUARY 11-15.—NEW ORLEANS, LA.
American Road Builders' Association. Convention and Exhibit. (Municipal Auditorium.) Engineer-Director, Charles M. Upham, 952 National Press Building, Washington, D. C.

JANUARY 13-14.—NEW ORLEANS, LA.
Association of Asphalt Paving Technologists. Annual meeting in conjunction with American Road Builders' Association. (Municipal Auditorium.) Secretary-Treasurer, W. J. Emmons, 1224 East Engineering Building, University of Michigan, Ann Arbor, Mich.

JANUARY 18-20.—NEW YORK.
American Society of Landscape Architects, Inc. Annual meeting. Executive Secretary, Bradford Williams, 9 Park Street, Boston, Mass.

JANUARY 20-22.—NEW YORK.
American Society of Civil Engineers. Annual meeting. (Hotel Roosevelt.) Secretary, George T. Seabury, 33 West 39th Street, New York.

JANUARY 21-24.—WASHINGTON, D. C.
Council of State Governments. Third General Assembly. (Mayflower Hotel.) Executive Director, Henry W. Toll, 850 East 58th Street, Chicago, Ill.

JANUARY 21-23.—NEW YORK.
New York State Sewage Works Association. Annual meeting. Secretary-Treasurer, A. S. Bedell, State Department of Health, Albany, N. Y.

JANUARY 22-23.—NEW YORK.
American City Planning Institute. Annual meeting. Secretary, Howard K. Menhinick, Hunt Hall, Cambridge, Mass.

JANUARY 22-23.—NEW ORLEANS, LA.
Louisiana Engineering Society. Annual meeting. (St. Charles Hotel.) Secretary, Arthur M. Hill, Suite 422, St. Charles Hotel, New Orleans, La.

JANUARY 25-29.—NEW YORK.
American Institute of Electrical Engineers. Annual winter convention. National Secretary, H. H. Henline, 33 West 39th Street, New York.

JANUARY 22-24.—WASHINGTON, D. C.
National Public Housing Conference. Fourth Annual Slum-Clearance and Low-Rent Housing Conference. (Hotel Willard.) Secretary, Miss Helen Alfred, 112 East 19th Street, New York.

JANUARY 25-27.—ST. LOUIS, MO. (300)
American Society of Heating and Ventilating Engineers. Annual meeting. Secretary, A. V. Hutchinson, 51 Madison Avenue, New York.

JANUARY 25-29.—WEST LAFAYETTE, IND. (800)
Purdue Road School. Address: Prof. Ben H. Petty, Engineering Extension Department, Purdue University, West Lafayette, Ind.

JANUARY 27-29.—DETROIT, MICH.
National Paving Brick Association. Annual meeting. (Book-Cadillac Hotel.) Managing Director, G. F. Schlesinger, 1245 National Press Building, Washington, D. C.

FEBRUARY 15.—SAN ANTONIO, TEXAS. (400)
Associated General Contractors of America, Inc. Annual convention. Managing Director, E. J. Harding, 222 Munsey Building, Washington, D. C.

FEBRUARY 15-20.—COLLEGE STATION, TEXAS.
Texas Water Works Short School. Annual session. Address: V. M. Ehlers, Secretary of the Southwest Water Works Association—Texas Section, Austin, Texas.

FEBRUARY 16-18.—ANN ARBOR, MICH.
Conference on Highway Engineering—University of Michigan. Annual convention. Secretary, R. E. Morrison, University of Michigan, Ann Arbor, Mich.

FEBRUARY 23-26.—NEW YORK. (500)
American Concrete Institute. Annual convention. Secretary, Harvey Whipple, 407 New Center Building, Detroit, Mich.

FEBRUARY 24-26.—NEW YORK. (1,000)
Association of Highway Officials of North Atlantic States. Annual convention. (Hotel Pennsylvania.) Secretary-Treasurer, A. Lee Grover, Secretary, State Highway Commission, Trenton, N. J.

MARCH 11-12.—TRENTON, N. J. (200)
New Jersey Sewage Works Association. Annual meeting. (Stacy-Trent Hotel.) Secretary, John R. Downes, Bound Brook, N. J.

MARCH 21-23.—HOUSTON, TEXAS. (200)
Southern Commercial Secretaries' Association. Annual meeting. Secretary-Treasurer, Stanley Draper, Chamber of Commerce, Oklahoma City, Okla.

MARCH 25-27.—PHILADELPHIA, PA.
American Water Works Association—Four States Section. Annual meeting. Secretary-Treasurer, C. H. Becker, 400 Chestnut Street, Philadelphia, Pa.

MARCH 30-APRIL 1.—(Place to be announced later.)
American Water Works Association—Florida Section. Annual meeting. Secretary, J. R. Hoy, 404 Hildebrandt Building, Jacksonville, Fla.

APRIL 5-6.—BOSTON, MASS. (1,500)
Massachusetts Safety Conference. Annual convention. (Hotel Statler.) Secretary, Lewis W. MacBrayne, 6 Beacon Street, Boston, Mass.

APRIL 6-8.—(Place to be announced later.)
American Water Works Association—Southeastern Section. Annual meeting. Secretary-Treasurer, W. H. Weir, 135 State Capitol Building, Atlanta, Ga.

APRIL 8-10.—BOISE, IDAHO. (300)
Pacific Northwest Regional Planning Commission. Conference. Chairman, Marshall N. Dana, 220 Federal Court House, Portland, Ore.

APRIL 12-14.—CHATTANOOGA, TENN.
American Water Works Association—Kentucky-Tennessee Section. Annual meeting. (Hotel Patten.) Executive Secretary, Howard D. Schmidt, 420 Sixth Avenue North, Nashville, Tenn.

APRIL 14-16.—MONTREAL, CANADA.
American Water Works Association—Canadian Section. Annual meeting. (Windsor Hotel.) Secretary-Treasurer, Dr. A. E. Berry, Ontario Department of Health, Parliament Buildings, Toronto, 5, Ont.

APRIL 19-22.—LEWISTOWN, MONT.
American Water Works Association—Montana Section. Annual meeting. Secretary, Herbert B. Foote, State Board of Health, Helena, Mont.

APRIL 26-29.—WASHINGTON, D. C. (2,000)
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 1615 H Street N. W., Washington, D. C.

APRIL 29-30.—SPRINGFIELD, ILL.
American Water Works Association—Illinois Section. Annual convention. Secretary-Treasurer, W. D. Gerber, Engineer, State Water Survey, Urbana, Ill.

MAY 10-14.—CHICAGO, ILL. (500)
National Fire Protection Association. Annual convention. (Congress Hotel.) Managing Director, Franklin H. Wentworth, 60 Batterymarch Street, Boston, Mass.

MAY 20-22.—VICTORIA, B. C.
American Water Works Association—Pacific Northwest Section. Annual meeting. (Empress Hotel.) Secretary, Fred Merryfield, Oregon State College, Corvallis, Ore.

MAY 23-29.—INDIANAPOLIS, IND.
American Public Welfare Association. Annual conference. Director, Fred K. Hoehler, 850 East 58th Street, Chicago, Ill.

MAY 23-29.—INDIANAPOLIS, IND. (150)
Community Chests and Councils, Inc. Annual meeting. Executive Vice-President, Allen T. Burns, 155 East 44th Street, New York.

MAY 23-29.—INDIANAPOLIS, IND. (5,000)
National Conference of Social Work. Annual conference. General Secretary, Howard R. Knight, 82 North High Street, Columbus, Ohio.

MAY 24-27.—PITTSBURGH, PA. (1,500)
National Association of Purchasing Agents. Annual convention. (William Penn Hotel.) Secretary-Treasurer, G. A. Renard, 11 Park Place, New York.

MAY 31-JUNE 4.—CLEVELAND, OHIO. (200)
Building Officials' Conference. Annual convention. (Hotel Statler.) Secretary-Treasurer, William F. Hurd, Commissioner of Buildings, Indianapolis, Ind.

JUNE 7-11.—BUFFALO, N. Y.
American Water Works Association. Annual convention. (Hotel Statler.) Secretary, Harry E. Jordan, 29 West 39th Street, New York.

JUNE 21-25.—MILWAUKEE, WIS.
American Institute of Electrical Engineers. Annual summer convention. National Secretary, H. H. Henline, 33 West 39th Street, New York.

JUNE 21-26.—NEW YORK. (3,500)
American Library Association. Annual conference. (Waldorf-Astoria Hotel.) Secretary, Carl H. Milam, 520 North Michigan Avenue, Chicago, Ill.

JULY 5-13 (approximate).—PARIS, FRANCE
Housing and Town Planning Congress. International Federation for Housing and Town Planning. Organizing Secretary, H. Chapman, 25 Bedford Row, London, W. C. 1, England. *International Housing Association.* General Secretary, Prof. Franz Schuster, Hansa-Allee 27, Frankfort a/M, Germany.

AUGUST 18-20.—DEARBORN, MICH.
American Water Works Association—Central States Section. Annual meeting. (Dearborn Inn.) Secretary, H. L. Nelson, 2435 Koppers Building, Pittsburgh, Pa.

OCTOBER 5-8.—NEW YORK.
American Public Health Association. Annual meeting. Executive Secretary, Dr. Reginald M. Atwater, 50 West 50th Street, New York.

OCTOBER 11-14.—AUSTIN, TEXAS.
American Water Works Association—Southwest Section. Annual convention. Secretary-Treasurer, Lewis A. Quigley, 3320 West Berry Street, Fort Worth, Texas.

OCTOBER 20-23.—(Place to be announced later.)
American Water Works Association—California Section. Annual convention. Secretary-Treasurer, Carl M. Haskinson, Chief Engineer, Division of Water, Sacramento, Calif.

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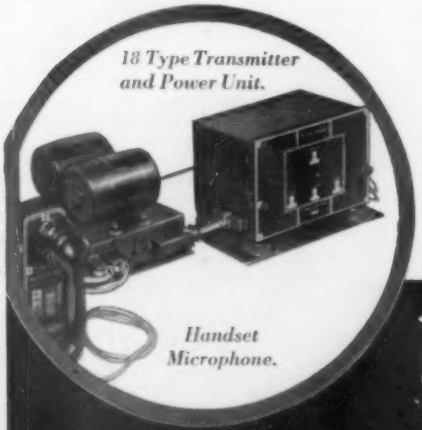

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News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

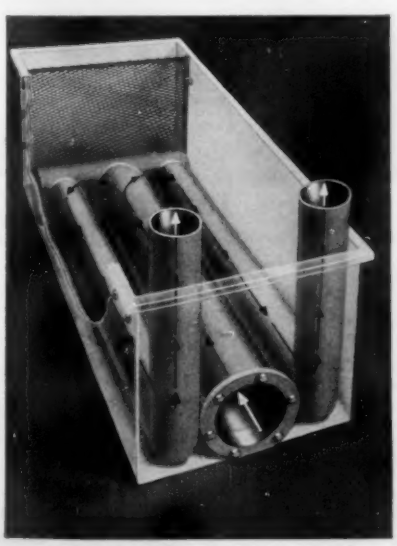
New Heating Method in Bituminous Kettles

An entirely new type of tar and asphalt melting kettle known as the Speed-Master has been developed by the Hauck Manufacturing Co., 126-134 Tenth Street, Brooklyn, N. Y. The manufacturer claims the development of an entirely new heating principle by which the conventional fire-box with its heat losses and kettle-bottom burn-outs is eliminated.

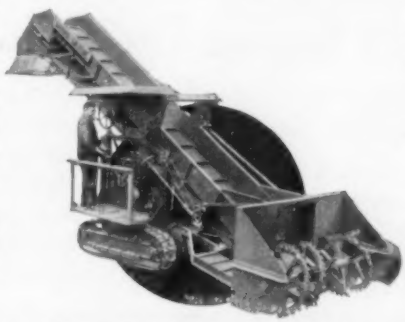
In the Speed-Master the heat from the burner is distributed by a double return tube heating system inside the kettle, completely surrounded by asphalt or pitch. The heat is transferred rapidly and uniformly to the material, resulting in fast melting and the cutting of fuel consumption from 50 to 60 per cent because practically all of the heat generated is absorbed by the material.

The kettle is equipped with a no-freeze draw-off cock which prevents cold material from solidifying in the cock and eliminating delays usually experienced when drawing off melted material in the morning. Hauck states that this kettle melts 14 drums of high melting point asphalt, or 25 barrels of pitch, in a 75-gallon kettle per 10-hour day.

Collection of sediment and slag does not decrease or interfere with the melting speed because the kettle is not heated from the bottom. Sediment is readily removed when cleaning the kettle, and there is an entire absence of coking, which eliminates the need of chopping coked material out of the bottom of the kettle. Other advantages claimed are that the sides, bottom and draw-off end of the Speed-Master are effectively insulated, and the entire heating system can be easily removed if and when necessary. This kettle is built in 25-, 50-, 75- and 100-gallon capacities, is of all-steel construction and furnished in either skid or wheel types, with a detachable fuel tank and burner which can be used as a separate torch heating unit.



PHANTOM VIEW OF THE NEW HAUCK HEATER



THE NEW MODEL 38-D BARBER-GREENE SNOW LOADER

New Fast Snow Loader Moves 10 Yards a Minute

The 1937 Model 38-D Snow Loader announced by the Barber-Greene Co., Aurora, Ill., will load 10 yards of snow a minute by means of its new spiral feed, which operates across the full working face of the machine and greatly increases the feeding ability under tough conditions.

The spiral feed is positive up to the capacity of the Barber-Greene automatic overload release, a patented feature which drives the spirals. The tension of the overload release is adjustable. When the spirals strike an unforeseen obstacle hidden in the snow, the release slips and immediately resets itself, thus protecting the machine from strain.

This new machine has a traveling speed of 2 to 3 mph combined with the positive travel ability of a full crawler mounting. Thus it is able to get to the job site quickly, and its numerous slow crowding speeds allow it to work always at the maximum possible speed.

One of the new features of this machine is the side discharge shuttle conveyor, an optional extra. This gives the operator instant control and obviates the need of trucks backing under the discharge spouts.

Instead of merely being a machine suitable for winter work, the Model-38-D can easily be converted into a Model 82 Bucket Loader for handling sand and gravel. The new machine is described in a 24-page booklet, "Snow Insurance," which not only describes the details of the Snow Loader but discusses the subject of snow removal in general.

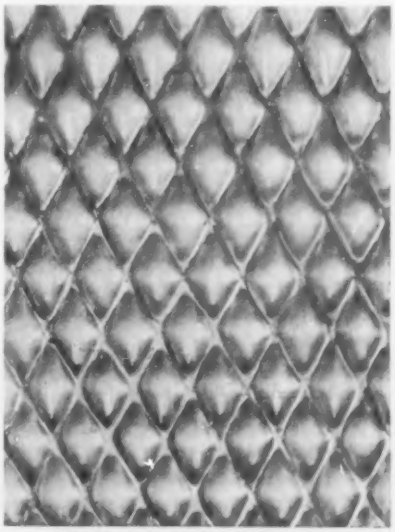
Dorrco House Warming

The Dorr Company, Inc., tendered a reception on December 11 to about 200 guests to celebrate its removal into its new and enlarged office headquarters at 570 Lexington Avenue, New York. The occasion was also a celebration of the starting of construction work on the new Dorr research laboratory at Westport, Conn.

Street-Lighting Glassware

Glassware, to a very large extent, determines the service and satisfaction of a street-lighting system. The Line Material Co., South Milwaukee, Wis., has developed a patented design of diamond-mesh street-lighting glassware which is said to increase illumination efficiency and decrease maintenance costs. There are no pockets on L-M diamond mesh globes to collect dirt, and rain and melting snow flow in tiny rivulets between the diamonds, draining off the dust and dirt.

This pattern diffuses the light rays over a wide area, providing greater visibility and eliminating glare. It also permits increased lighting power without additional operating costs, according to the manufacturer. This glassware is uniformly strong because of the thorough mixing of the ingredients plus unusually long melting at intense heat to insure homogeneity. Slow cooling and annealing of each globe increases the toughness and weather-resisting durability. The edges are ground carefully to insure smoothness for dust-proof, moisture-proof fitting. This glassware is shipped in special cartons to prevent loss by breakage.



THE L-M DIAMOND MESH GLASSWARE, WHICH DIFFUSES STREET-LIGHTING SOURCES TO PREVENT GLARE

Toledo Installs *Automatic* Parking Meters

E. Jack Erwin, Captain of Toledo's Traffic Bureau says:

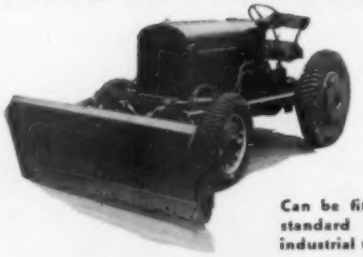
"I sincerely believe that this is the first real step toward uniform parking regulation throughout the United States . . . It has been nothing short of miraculous, the manner in which they have served to clear up a bad condition and placed regulation on a new basis."

LONG BEACH, CALIF.
has just installed 400 of these Modern Automatic Parking Meters . . .

DUAL PARKING METER CO.

Commerce Exchange Bldg. ***Carl C. Magee, President*** Oklahoma City, Okla.

The GAR WOOD CROSSWALK SNOW PLOW



Can be fitted to any standard wheel-type industrial tractor.

A new tool particularly valuable to street maintenance departments of cities and towns is now available for clearing snow easily, swiftly and economically. An exclusive feature is the independent knee-action device built into the moldboard to clear manholes and other obstructions.

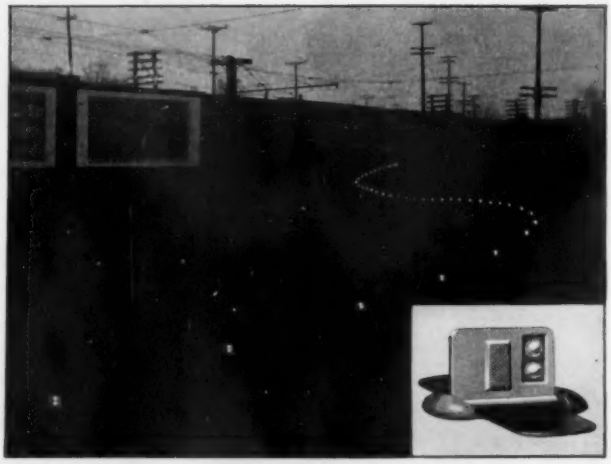
Especially valuable is the positive control of the cutting depth of the blade with the use of two "double-action" hydraulic jacks. This exclusive feature not only makes the unit an excellent snow plow but a year-'round machine for light-duty grading, leveling rubbish dumps and other types of bulldozing.

For complete details, wire or write

Road Machinery Division

GAR WOOD INDUSTRIES, INC.

Detroit, Michigan



LIFE LINE . . . *the New and Better Traffic Marker*

VISIBILITY means the difference between safety and danger—even life and death. Life Line Traffic Markers provide *permanent* visibility of such high efficiency at so low a cost as to make any other road marking method virtually obsolete. The Life Line reflectors appear as a row of small electric lights which can be seen at a greater distance than even today's high speeds require. Write for information and the name of your representative.

NATIONAL TRAFFIC APPLIANCE CO.

3088 West 106th Street Cleveland, Ohio

THE SIMPLEX TYPE MS METER REGISTER

A New, More Compact Venturi Meter Recorder

The new Type MS Simplex meter is, in common with all mechanically operated instruments made by the Simplex Valve & Meter Co., Philadelphia, Pa., actuated by the Ledoux shaped float which, under the influence of differential pressures produced by the venturi tube, moves through distances directly proportional to the rate of flow. The float movement is transmitted to the pen, pointer, and totalizer assembly by means of a forked lever operating through a grease-packed stuffing-box.

The flow scale of the Type MS meter is uniformly graduated and is of the segmental type sufficiently large so as to be readable for a distance of 10 feet from the instrument. If desired, a separate 5-inch radius indicator can be supplied. The chart is also uniformly graduated, circular, and 12 inches in diameter, designed for either daily or weekly removal. Both the flow scale and the chart can be graduated from 0 to 10 and can be furnished with a multiplying factor or can be graduated for direct reading in any desired units of flow.

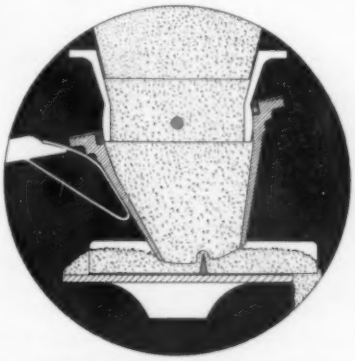
The totalizer is a continuous friction disc drive similar to that used in all Simplex meters. Positioned by the float arm, the totalizer carriage, by virtue of its position on the friction disc, allows accurate integration of all flows within the range of the metering instrument. The totalizer gearing is wholly enclosed, and the totalizer face is of the five-digit type, having a sixth fast-reading pointer for test purposes. The chart and totalizer can be driven by synchronous motor electric clocks. Where electricity is not available, sufficiently reliable seven-day spring-wound clocks are supplied.

A Dry-Feed Machine for Water Chemicals

A dry-feed machine for water-works chemicals that will handle any dry material from lumps down to fine powder, including crushed quicklime, hydrated lime, soda ash, sodium aluminate, alum and sulphate of iron, has been installed in many water-works plants by the Omega Machine Co., Inc., 4010 Penn Avenue, Kansas City, Mo. This Omega Universal feeder is made in three standard sizes, providing capacities suitable for handling from a few pounds to several carloads per day.

The machine consists of a dust-proof housing, a conical hopper, an oscillating hopper, scraper, receiving tray, mixing chamber, and outlet. An outside motor oscillates the hopper through a connecting rod, and this motion pushes a measured portion of material off the receiving tray, from which it falls into the mixing chamber. The length of stroke, or degree of oscillation of the hopper, is controlled by a micrometer screw, and the degree of movement is indicated by deep, clearly engraved lines and figures permitting an adjustment to within 0.01-inch. Means is also provided through an adjusting mechanism for increasing or decreasing the height of the tray, thereby controlling the size of the outlet opening at the lower end of the oscillating hopper.

A special agitator consisting of a pair of plates hung loosely on opposite sides of the hopper is used when feeding lime or other material liable to arch or adhere to the hopper. These plates are given a



IN THE OMEGA DRY-FEED MACHINE THE WIDTH OF THE RIBBON OF CHEMICAL IS FIXED, BUT THE DEPTH IS CHANGED FOR DIFFERENT CHEMICALS

slight vertical movement by a connection to the shaft of the speed reducer. They are not used when feeding alum.

The width of the ribbon of chemical fed to the mixing chamber is fixed, but the depth is changed to suit various conditions and materials by raising or lowering the tray. Ordinary changes in the rate of feed are made by changing the stroke or backward and forward travel of the oscillating hopper, not by moving the tray.

Over 100 cities use Omega Universal feeders, including Detroit, Saginaw, Grand Rapids, and Bay City, Mich.; Western Springs, Bloomfield and Decatur, Ill.; Fort Wayne, Ind.; Youngstown, Ohio; Topeka, Kansas; Oklahoma City and Tulsa, Okla.; Raton, N. Mex.; Fort Worth, Texas; Newport News and Norfolk, Va.; Louisville, Ky.; Ottumwa, Iowa; Atlantic City, N. J.; Hamilton and Niagara Falls, Ont., and others.

New 100-Ton Incinerator

Hiler Engineering & Construction Co., Pittsburgh, Pa., has recently received a contract for the construction of a 100-ton garbage and rubbish disposal incinerator at a cost of about $70,000, at New Kensington, Pa., which has a population of about 16,000.

Office Equipment Still More Modern

Modern payroll machines and methods were featured by the Burroughs Adding Machine Co. at a recent business show in New York. A headline attraction for cities was the new typewriter calculating payroll machine, which calculates earnings, deductions, and net pay, makes a record of all of them at one operation, and writes the employee's check as a by-product. The machine also automatically numbers, dates and protects the checks it writes. All the operator has to know is the number of hours worked, rate of pay and miscellaneous deductions—the machine calculates all the rest.

In the typewriter section, Burroughs presented, for the first time, its new fan-fold biller, which writes multiple sets of continuous forms, and shifts the carbons from a completed set to the next set to be written. Usually this requires a number of operations. The machine is designed for writing bills, orders, notices, purchase orders and similar forms. A wide selection of type styles and sizes to meet individual requirements is available.

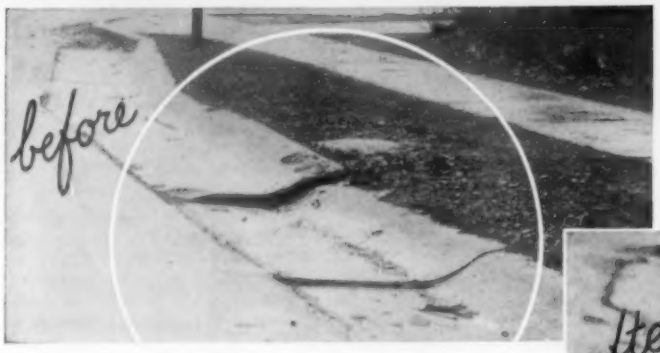
In the accounting machine section were several entirely new high-speed bookkeeping machines and many models with improvements over the machines shown a year ago.

The latest model high-speed machine for ledger and statement posting has proved to be the most popular bookkeeping machine ever released by Burroughs. Some of its operating features are: automatic printing of balances; automatic closing of carriage; fast tabulation and fast carriage return; and visible alignment of posting lines. Another model, which calculates interest as it posts, is used for calculating and writing tax lists and tax bills in a single operation. A similar type of machine is used for posting the various budgetary control accounts.

Burroughs announced the re-design of its line of single register calculators, including streamlining, higher speed, and greater ease of operation. The key action has been improved; clearance of the dials for the next problem has been speeded up; and new keytops provide more comfortable fingertip control. Simplified electric subtraction is a feature. Burroughs has just closed its 50th year in business.

THE NEW BURROUGHS FANFOLD BILLER

MUD-JACK METHOD
for raising concrete curb · gutter · walks · street



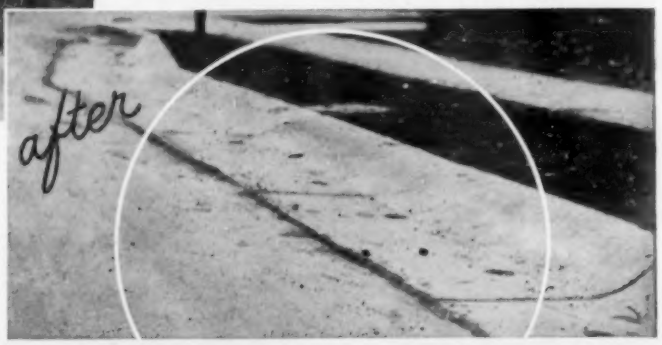
Sunken Curb and Gutter Marked for Reconstruction

but

THE MUD-JACK METHOD *corrected the settlement and saved the reconstruction costs*

Save CURB — GUTTER
WALKS — STREETS

The Mud-Jack method saves the slab —corrects the subgrade—eliminates pedestrian hazards. Write for data to reduce maintenance expense.



KOEHRING COMPANY
Pavers · Mixers · Shovels · Cranes
Draglines · Dumptors · Mud-Jacks
3026 WEST CONCORDIA AVE. MILWAUKEE, WISCONSIN

ANHYDREX
RUBBER INSULATION
FOR WIRES AND CABLES

With ANHYDREX insulation lead sheaths and other metallic coverings may safely be omitted from submarine or underground power cables, thereby doing away with the possibility of electrolysis, crystallization and sheath currents. ANHYDREX does not absorb moisture. It has the electrical properties of high-grade rubber insulation.

•

Descriptive booklet "ANHYDREX Rubber Insulation" upon request.

•

SIMPLEX WIRE & CABLE CO.
79 Sidney Street, Cambridge A
BOSTON, MASS.

GRAVELY SNOW PLOW
Makes an All-Year GRAVELY SIDEWALK Machine Out of Your MOWER

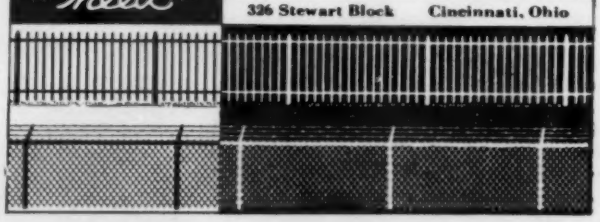
Quickly converts your Mower into a capable Sidewalk Snow Plow, for paths 40-54 inches wide. Goes places where the BIG Plow would get stuck!

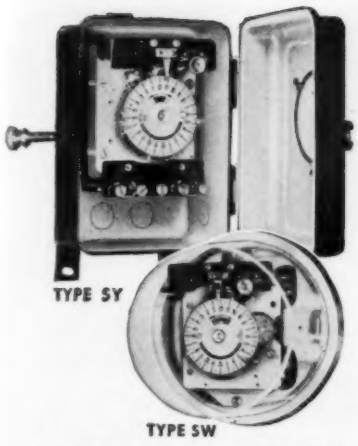
A mower in summer, a sidewalk snow plow in winter — TWO effective machines at only slightly more than the price of ONE! Prices and specifications on request.

Gravely Motor Plow & Cultivator Co., Dunbar, W. Va.

FENCE *for every* **PUBLIC PROPERTY** *need*

Stewart FENCES
IRON AND CHAINLINK WIRE
New Catalog Sent Upon Request
THE STEWART IRON WORKS CO., INC.
326 Stewart Block Cincinnati, Ohio





THE NEW SAUTER MOTOR TIME SWITCH

Time Switches for City Lights

Time switches which will turn street lights on and off at predetermined hours, and which will shut off traffic lights at the hour when they are not needed, have been developed in two new types, by the R. W. Cramer Co., 67 Irving Place, New York. These two synchronous motor time switch models bearing the well-known Sauter name are offered in 4-ampere or 30-ampere capacities for 110- or 220-volt circuits. Both will control almost any type of alternating-current circuits operated on a predetermined time basis.

The quality of workmanship, long life, and simplicity and compactness of design are guaranteed by the R. W. Cramer Co. The gears are accurately cut, and hardened steel pinions are used throughout. The clock plates are heavy, to assure substantial bearings. Plain or astronomic dials are furnished according to need. Vernier time adjustments make it possible to set these switches within one-half minute.

The Sauter SY with its all-metal housing covers a broad field of application, and Model SW is designed for mounting in a standard meter socket.

New Luminaire for Street Lighting

A new, attractive street-lighting luminaire has recently been announced by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Radically new in design, the Reflectolux Jr. luminaires distribute light evenly along the street by means of carefully designed reflectors and bi-flectors made of specular Alzak, a processed aluminum. The luminaires are dust- and weather-proof and easy to relamp and maintain.

The luminaire consists essentially of canopy, reflector globe holding ring and globe. The light center of the lamp is 1¾ inches above the bottom of the main reflector, thus producing a sharp cut-off below the horizontal. The overall height of the Reflectolux Jr. is 22¾ inches, and its overall diameter is 13⅝ inches.

Facilities for mounting a series socket and receptacle, or mogul multiple or medium multiple sockets, are provided inside the canopy. Where different types of circuits are operated by the same supervision, this latter arrangement will be appreciated, as it materially reduces the number of parts required in stock, and makes the appearance of the luminaires on the various circuits identical.

The reflector is spun from thick Alclad aluminum, following a contour carefully determined to produce the best distribution possible. Alzak finish is applied to the reflector after it is fabricated. The heel of the reflector is 5½ inches in diameter, large enough to easily clear a maximum size 500-watt lamp, for which the luminaire is designed. For asymmetric distribution, additional bi-flectors, made

THE NEW WESTINGHOUSE STREET-LIGHTING UNIT

of specular Alzak processed aluminum, are mounted inside the main reflector, forming an integral part with it.

The globe was designed specially for the Reflectolux Jr. and conforms to the general contour of the luminaire. It is of rectilinear design and is held to the reflector by means of a globe band, seating in a gasketed recess. This provides a weatherproof seal, yet permits easy replacement of the glassware in the field when necessary.

In localities where more decorative luminaires are desired, an attractive cast aluminum ornament assembly can be added. This assembly slides over the canopy and is locked in place by two set screws. The relamping and cleaning procedure is the same, as the ornaments are fastened to the canopy only.

Manhole Cushions

A gasket which is easily installed and permanently stops rattling in manhole covers has been announced by the Turbine Sewer Machine Co., 52d and West State Streets, Milwaukee, Wis. This Turco manhole cushion is an emulsified asbestos impregnated with a network of wire. Resiliency is achieved by a special rubberizing process. It is said that this material is not affected by heat or cold, and that it may be easily and quickly applied by untrained labor.

The cover of the manhole is removed and dirt and gravel brushed away from the flange of the casting and from the underside of the cover. Then the correct length of Turco manhole cushion, approximately three times the diameter of the cover, is cut from the reel and bent to shape, and inserted flat on the seat of the manhole frame. The cover is then replaced carefully, and traffic may pass over the cover immediately.

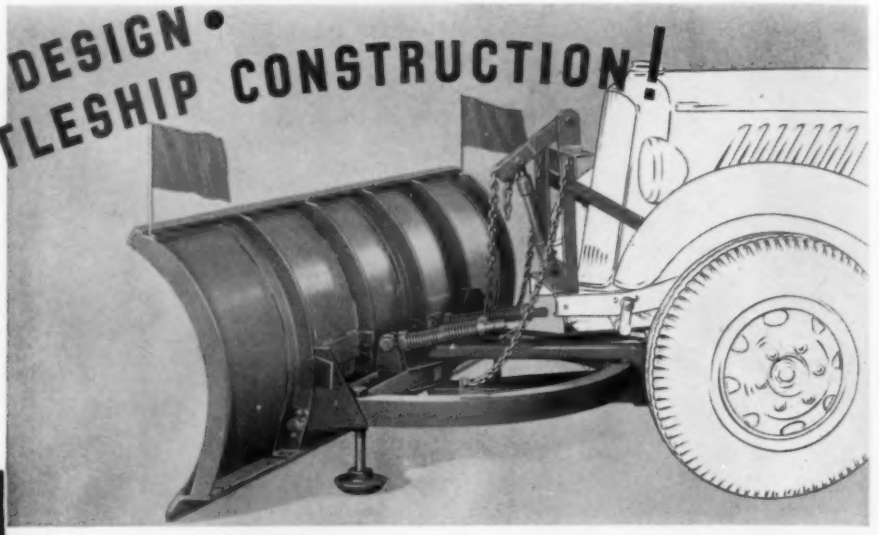
A Snow-Removal Unit for Triborough Bridge

The Triborough Bridge Authority of New York City is not going to have New York's newest bridge blocked with snow this winter. This $60,000,000 ingeniously devised structure of approaches, underpasses, spans and viaducts is to be protected by a heavy-duty Mack truck on the front of which is mounted a one-way Frink model 40 SB plow for clearing loosely packed drifts at high speed. Beneath the body of the truck is a Willett center plow for scraping ice and hard-packed snow. Both plows are controlled by hydraulic power from the cab.

In addition to its winter duties of keeping the bridge and approaches clear, the truck covers a wide utility range in general maintenance work. Equipped with a 5-yard dump-body and a power-operated swinging boom crane of 1-ton capacity, it will be used for transporting heavy bridge equipment, stanchions, etc., to and from the paint and repair shops and from one part of the bridge to another.

AN EFFECTIVE ALL-ROUND SNOW-REMOVAL UNIT, BUILT FOR THE TRIBOROUGH BRIDGE AUTHORITY, NEW YORK CITY

STREAMLINE DESIGN • BATTLESHIP CONSTRUCTION!



HEIL Quality PRODUCTS

HOISTS · BODIES · TANKS
ROAD SCRAPERS · SNOW PLOWS*
BOTTLE WASHERS · DEHYDRATORS
OIL BURNERS · WATER SYSTEMS

Streamline design insures fast, efficient plowing service—Battleship construction means long life and dependability regardless of the severity of plowing conditions—The Heil Quality line of snow plows includes: standard blade plows, "V" plows and semi-circle blade plows —Write today for latest bulletins and recommendations based on your requirements . . . . . Address:

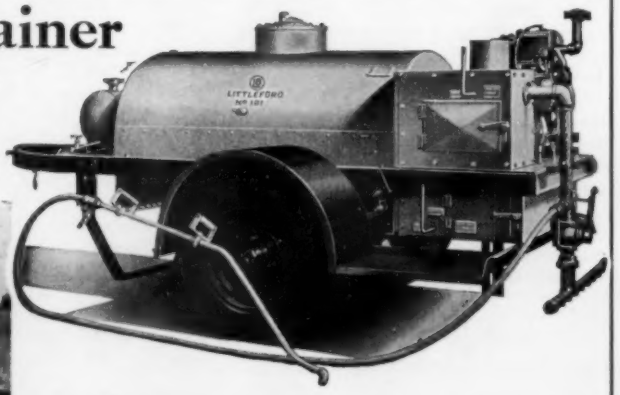
THE HEIL CO.

Factory and General Offices: 3000 West Montana Street, Milwaukee
Branch Factory Hillside, N. J. - - - - Distributors and Branches Everywhere

Your Black Top Maintainer

For 1937—the No. 101 SPRAYER

Find out about this modern unit that does all your black top repairs and even construction using any type of road bitumen.



One present user of this No. 101 Sprayer says: "Will recommend it to anyone in need of heating and spraying equipment. It will do the work of five or six heaters." Get the facts, now.

For Full Information Send This Coupon Today

LITTLEFORD

Road Maintenance Equipment

SINCE 1900

LITTLEFORD BROS. 500 E. PEARL ST. CINCINNATI, O.

Littleford Bros., 500 E. Pearl St., Cincinnati, Ohio

Tell me what a Littleford No. 101 Sprayer of ..... gal. capacity will do for me and what it will cost.

Name .....

Title.....Company or Dept.....

Address .....

City ..... State.....

A PORTABLE CHLOR-O-FEEDER FOR EMERGENCY OR STANDBY USE

Injecting Chlorine Solutions into Mains

Service over a long period has demonstrated the accuracy and dependability of Chlor-O-Feeders for feeding hypochlorine solutions into water mains for the sterilization of water supplies as well as to retard algae growth, and for slime control in pipe lines, tanks and reservoirs. They may likewise be used to apply copper sulphate solutions to prevent biological growths.

The Midget Chlor-O-Feeder automatically starts and stops operation as the pumps are started and stopped. It is adaptable to treating any pumped water supply, whether the pump is driven by gasoline engine, electric motor, or other means. The installation is so simple that it is usually made by a mechanic in the water works without the aid of a service man.

These units have been developed for pressures up to 60 pounds, and a high-pressure unit of the plunger type for pressures from 60 to 150 pounds or more. The construction of the high-pressure Midget differs from the heavy-duty unit in that the diaphragm head is replaced by a cylinder and plunger type of reagent head. Use of the high-pressure unit is often avoided by feeding to the suction side of the pumping system with the heavy-duty Midget equipped with a spring loaded relief valve.

The portable Chlor-O-Feeder is supplied by Proportioneers, Inc., Providence, R. I., in portable hand-carrying case and equipped with interchangeable a-c or d-c electric motors, Pelton water wheel, or for belt drive. These units can be used on short notice for emergency chlorination, for stand-by to temporarily replace regular gas chlorinators, or to augment gas or hypo-chlorinators during periods of extreme demand.

New Oil-Burning Engine Has Unusual Features

In the new Sterling crankless, opposed-piston, two-stroke cycle compression ignition oil-burning engine, the Sterling Engine Co., Buffalo, N. Y., has developed what it believes is the simplest power plant available. The unusual construction, in that the piston operates horizontally with two in each cylinder, eliminates more than half of the normal reciprocating parts found in the conventional internal-combustion engine.

Replacing the crankshaft is a straight shaft of greater strength which receives the power fom the pistons through two inclined discs mounted one on each end. Only three, force-feed lubricated, bearings are required to carry this share.

The elimination of cylinder heads is made possible through the absence of valves, valve springs, push rods and rocker arms, since all fuel and air for compression needs are admitted to the cylinders through parts that are opened and closed with the passage of the pistons along the cylinders. The same is true for scavenging air. Both atomized fuel and air are injected by pressure, and combustion proceeds with a whirling action. The air is introduced into the cylinders under a pressure of from 3 to 4 pounds per square inch. As the two opposing pistons approach each other, this air is compressed to a maximum of 500 to 550 pounds per square inch, producing a natural temperature of 1,000 degrees F. Just before this temperature is attained, the fuel is injected under a pressure of 2,500 pounds per square inch. The 1,000-degree temperature is sufficient to produce its own ignition without the aid of electrical devices. The same air processes are followed to produce a thorough scavenging of the cylinders at the end of the power stroke.

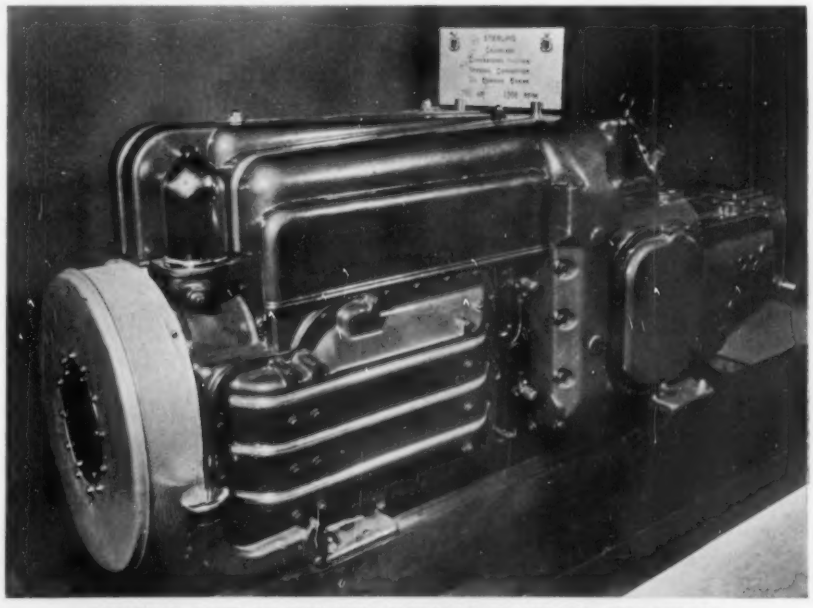
Cylinder heads, valves and cylinder-head gaskets are omitted, thus eliminating the danger of cracks and blow-outs, as well as a cold inner surface of the cylinder head. The usual water jacketing for cooling is removed, except that directly around the cylinders. This gives more normal operating temperature.

Piston pins are eliminated through the use of ball and pad thrust bearings at each end of what normally would be the connecting rod, leaving the pistons free to glide horizontally in a straight line without side stresses. These bearings are of the Michell thrust principle almost identical in design with those used to take up thrust on the propellers of giant ocean liners and in huge turbines. Only one model of this engine is now in production, the CD-425, which develops 150 hp at 1,200 rpm. The engine is started through a standard electric starter with a separate generator for charging batteries.

Consulting Practice of Nicholas S. Hill Continued

Following the death of Nicholas S. Hill, Jr., internationally known consulting engineer in the field of sanitary works and appraisal, on October 18, 1936, his estate has discontinued the office formerly maintained by him at 112 East 19th Street, New York.

George H. Buck, William P. Seifert and Charles F. Jost, formerly associated with Mr. Hill in his consulting practice, have taken over the office and the consulting practice. They are operating under the name of Nicholas S. Hill Associates at the same address. The estate of Nicholas S. Hill, Jr., is no longer connected with the consulting business in any way.



EXTERNAL VIEW OF THE NEW STERLING CRANKLESS, TWO-STROKE CYCLE, OPPOSED-PISTON DIESEL ENGINE

HAZARD ARMORTITE CABLE

(Non-Metallic Armored)

Hazard Armortite Cable is the ideal cable for bridge lighting. Its non-metallic armor of hard vulcanized tape affords ample protection against abrasion and other mechanical damage. Impregnated wrappings make this cable waterproof. Because lead and metal sheaths are thus unnecessary, Armortite is light in weight, easier to handle and cheaper to lay, and is operated without excessive sheath losses, of steel-armored cables. Our booklet "Armored Underground Cable" is interesting to all City Engineers.

Sales Offices:

New York Chicago Philadelphia
Atlanta Seattle Dallas
Pittsburgh Buffalo Boston
San Francisco Los Angeles
Detroit Washington

HAZARD INSULATED WIRE WORKS

Division Of THE OKONITE COMPANY

WORKS: WILKES-BARRE, PA.

WHAT PRICE DELAYED ALARMS?

FIRE LOSS— $4,000,000,000

Statistics compiled and published show the national fire loss for ten years—1926 to 1935 inclusive—to be in excess of the above figure.

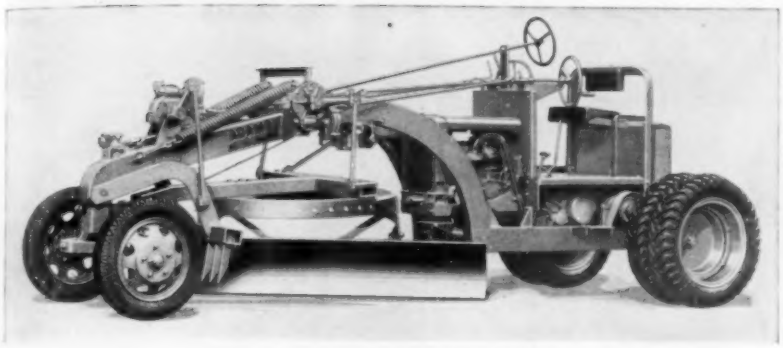
Nearly all fires may be extinguished in their incipiency by a bucket of water.

The *Fire Alarm Box* is the only available and ever accessible means for transmitting fire alarms *directly* to the *fire department.*

Are your citizens not entitled to this protection?

THE GAMEWELL CO.

NEWTON MASSACHUSETTS



THE NEWEST ADAMS MOTOR PATROL

Low-Priced Motor Grader With Special Heavy Drive

A new Adams motor grader No. 20 powered by an International I-12 tractor with a 22½-hp engine has been announced by J. D. Adams Co., Indianapolis, Ind. This machine is expected to serve municipalities and towns where heretofore it has been thought impracticable, both from a work standpoint and financially to justify the purchase of a larger motor grader. It may be used for maintaining unimproved streets and alleys, for grading and maintaining roads and runways in parks, golf courses and airports as well as on township and light county maintenance.

The manufacturer states that a special heavy-duty, one-piece rear axle is provided, driven by two large roller chains from the tractor axle. This chain drive between the tractor axle effects a speed reduction which increases the pulling power of the tractor 65 per cent. There are three working speeds of 2, 3.5, and 6 mph which are variable by foot and hand throttles. A speed of 7.5 mph is possible when the machine is traveling empty.

The narrow all-welded frame is of the box-type, providing strength and rigidity and giving the operator an unobstructed view of the blade. Machine-finished ball-and-socket connections and a machined full circle allow close fit with adjustments for wear, eliminating lost motion and blade chatter.

Two hand-wheels within convenient reach of the operator raise and lower the blade. A simple gear transmission allows the right hand-wheel to operate the scarifier if the machine is so equipped. The side-shift of the blade is accomplished by a hand crank on the left side of the machine which operates a sliding bracket and side-shift link. The crank may be locked in any position by a hinged fork.

Standard equipment on this new machine includes a 9-foot blade, and the approximate weight of the machine is 8,300 pounds. Optional equipment includes 10- and 12-foot blades, scarifier, canopy top, enclosure, starting and lighting equipment and other accessories.

Remote Control of Variable Speed Motor

A new line of standardized parts for obtaining remote mechanical control of variable speed has been developed for use with the U. S. Varidrive motor. The bearing supports, shafting, sprockets and chains have been standardized so that the user can obtain variation of speed on the driven machine conveniently and economically. The speed control is positive, as there is no slippage in the control mechanism. Infinite speed variation within the speed range of the Varidrive may be obtained. This is a product of U. S. Electrical Motors, Inc., Los Angeles, Calif.

Otis Joins A. P. Smith

The A. P. Smith Manufacturing Co., East Orange, N. J., has announced with regret the resignation of its New England representative, F. L. Northrop, after 35 years of service. Mr. Northrop felt that failing health prevented him from doing justice to his work.

Donald K. Otis, formerly connected with the Union Water Meter Co., and well known throughout the New England territory, has been appointed to fill the vacancy caused by Mr. Northrop's resignation.

A. M. E. and I. A. P. W. O. Unite to Form New A. P. W. A.

By an overwhelming majority, members of both the American Society of Municipal Engineers and the International Association of Public Works Officials voted to merge the two societies, beginning January 1, under one set of officers, as the American Public Works Association. Ballots for officers show the almost unanimous election of Thomas Buckley, President; J. E. Root, First Vice-President; Guy Brown, Second Vice-President; and John Flockhart, Treasurer. The Board of Directors for the same period will consist of the four officers named above, and P. L. Brockway, William J. Galligan, G. F. Gascoigne, Lester Herzog, Henry L. Lowe, Mark B. Owen, Frederick Paul, and Roy L. Phillips, who were selected by the governing boards of the AME AND IAPWO at the Toronto convention last fall.

New Wheeled Rollers Equipped with Power to Increase Service

The Wheeled Roller has been accepted by many maintenance departments of states and counties as a handy device for rolling patches. Its two rubber-tired wheels permit rapid towing behind the maintenance trucks, and when it reaches the site of the patching it is unhitched from the truck, the tongue turned over, lifting the wheels from the ground and placing the roller in contact with the ground surface.

The Wheeled Roller Corporation, San Antonio, Texas, has now announced a power-driven wheeled roller known as No. 135. This motorized wheel roller is trailed to the job, as was the old one, and when on the job the tongue is lifted up and over as before, placing the single roller in contact with the ground. A subframe remaining in a stationary postion carries a 5-hp air-cooled gasoline engine which furnishes power for the roller. One man takes the tongue and guides it back and forth over the areas to be rolled. This roller has forward and reverse at the same speeds, these being from 1 to 2½ miles per hour.

The design permits the removal of the transporting wheels and the spindles by loosening one bolt when it is necessary to roll in close quarters, such as up against walls or curbs.

THE NEW POWERED WHEELED ROLLER READY TO BE MOVED TO ANOTHER CITY JOB

PLANNED STREET LIGHTING IS EVIDENCE OF WISE ADMINISTRATION

Your

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IF YOU PLAN YOUR LIGHTING

MANY existing street-lighting systems are becoming obsolete and must be modernized. New equipment must be added to meet increased demands for safety and protection. Progressive cities are obtaining modern street-lighting systems by adopting definite plans that cover modernization over a period of years—plans that set the goal and provide yearly steps toward its attainment.

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The first step in planning for your city is a survey of present street lighting. General Electric lighting specialists and experienced engineers are available to assist you with these plans. Merely write to the nearest General Electric Office or General Electric Company, Schenectady, N. Y.

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Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Kansas City, Kansas, Accepts Mercury-Vapor Lamps

Combines Two 200-Watt Incandescents for Efficiency, Appearance and Color of Light

By H. J. CHASE
Lighting Division, Westinghouse Electric & Manufacturing Co., Cleveland, Ohio

THE necessity for providing higher levels of street illumination for the protection of night travel is a problem confronting a majority of cities today. Shall they increase the number of street-lighting units; increase the size of lamp per unit; or utilize the latest developments in light sources and street-lighting luminaries? The latter method has been given considerable study in Kansas City, Kansas, where the new high-intensity mercury-vapor lamp has proved satisfactory for street-lighting service.

Each of four units on all corners of Fourth Street and Minnesota Avenue has a luminaire with a glass globe and canopy, supported on a trolley bracket at a height to obtain a light center approximately 20 feet above the pavement. Each luminaire is equipped with a 400-watt high-intensity mercury-vapor lamp and two 150-watt incandescent lamps, providing a total light output of 21,000 lumens. The luminaires are operated from a 6.6-ampere series street-lighting circuit through individual transformers, with one transformer operating the mercury lamp, and the other transformer operating the two incandescent lamps. The two 150-watt incandescent lamps are provided primarily to (1) partially correct the color distortion, (2) and provide a low level of illumination in case of momentary power interruption. In the permanent installation in this vicinity, 200-watt incandescents will be used.

This installation emphasizes the advantages of the combination mercury-incandescent unit over one using a single large incandescent lamp, or a cluster of incandescent lamps, such as are used on the streets adjacent. The outstanding advantages are efficiency of light production, and the more pleasing night appearance of the lighted unit. The combination units used for the test installation, complete with auxiliary transformer equipment, produce light at an efficiency of approximately 27 lumens per watt, while a comparable wattage incandescent lamp with auxiliary current transformer has an efficiency of 19 lumens per watt, and the small lamps used in the existing cluster units have an efficiency of approximately 14 lumens per watt. From these figures the importance of the higher intensity mercury-vapor lamp from an efficiency standpoint can be readily appreciated.

The night appearance of the combina-

There has been a general acceptance and an expressed satisfaction on the part of the merchants, and the Board of Public Utilities will replace the present old and obsolete five-light multiple units on this street with 136 mercury-vapor lamps from the intersection of Fourth Street to the intersection of Eighth Street on Minnesota Avenue. Each luminaire will contain a 400-watt high-intensity mercury-vapor lamp and two 150-watt Mazda lamps, mounted on bracket attachments to steel trolley poles, two units per pole, poles spaced 90 feet apart. We are also contemplating the installation of several additional units on the approach to the Intercity Viaduct, which is the main connecting link between Kansas City, Kansas, and Kansas City, Missouri, and which has recently been doubled in width by the State Highway Department.

JAMES D. DONOVAN,
Manager, Production and Distribution, Department of Water, Light and Power, Kansas City, Kans.

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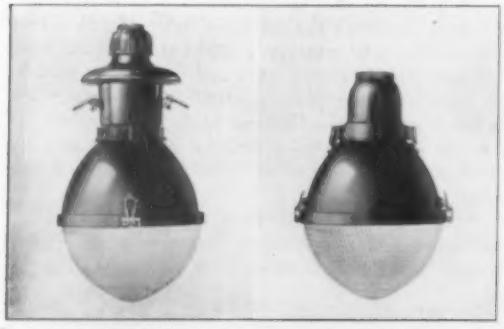

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LINE MATERIAL CO.

During January we hope you will remember to mention THE AMERICAN CITY

tion mercury-incandescent unit is far superior to that of a unit using an incandescent lamp only, as the bluish light of the mercury lamp lends a whiter and more sparkling appearance to the globe as compared with the yellowish appearance created by an incandescent lamp. It was found that where two incandescent lamps are used and located with their light centers approximately in the same horizontal plane as the centers of the light source in the mercury lamp, a much better blending of the colors will be obtained than when one large incandescent lamp is located above or below the mercury lamp.

It is the consensus of those interested in this installation, non-technically as well as technically, that the combination mercury-incandescent unit is a decided advancement in the art of street lighting and one that lends itself to the rehabilitation of existing street-lighting systems, as well as to the design of an entirely new system.

Parkways Relighted in Westchester County, N. Y.

WESTCHESTER COUNTY has decided to relight its parkway system, in response to thousands of letters of protest against the present lighting, and an offer of lower rates by the Westchester Lighting Co. The county's 1937 budget calls for a rise in taxes of 56 cents per $1,000, of which 1 cent is for restoring the parkway lighting.

Sodium Light on Boston Post Road

SIX miles of the Boston Post Road from the New York State line through Greenwich and Coscob to the Stamford town line is being lighted by 125 sodium lamps. The Connecticut Light and Power Co. states that this is the first and longest stretch of illuminated safety highway in the state.

San Francisco-Oakland Bay Bridge Carries 35 Cars Per Minute

THE $77,600,000 San Francisco-Oakland Bay Bridge was started July 9, 1933, completed on schedule, and opened to traffic in November, 1936.

The total length is 8¼ miles, 4½ miles over water. The towers of the suspension span are 470 to 515 feet above water. The cable contains 17,464 wires as thick as a lead pencil, and weighs a ton to the foot. Maximum clearance between bridge and water is 216 feet. There are two decks, each 60 feet wide; the upper, with six lanes, will carry all traffic until 1938, when the lower, with three lanes, will carry the trucks and buses and two electric-railway tracks. The annual capacity is 24,000,000 automobiles, and 6,000,000 trucks and buses. Traffic the first day totaled 47,000 cars at 65 cents toll. This rate is 57 per cent of total capacity and 73 per cent of present capacity. Both lanes and the approaches are lighted by more than 1,000 General Electric sodium-vapor luminaires. The state built and owns the bridge. Says E. R. Cato, Chief of the California State Highway Patrol:

"It has been our observation that the sodium lights in use on the bridge have practically deadened the glaring lights from approaching cars. To November 24, we had not experienced an accident on this structure, where the largest traffic volume has been handled of any locality in the state of California. The ability to see in fog, both day and night, has unquestionably reduced to a minimum the hazards of driving attributable to low visibility."

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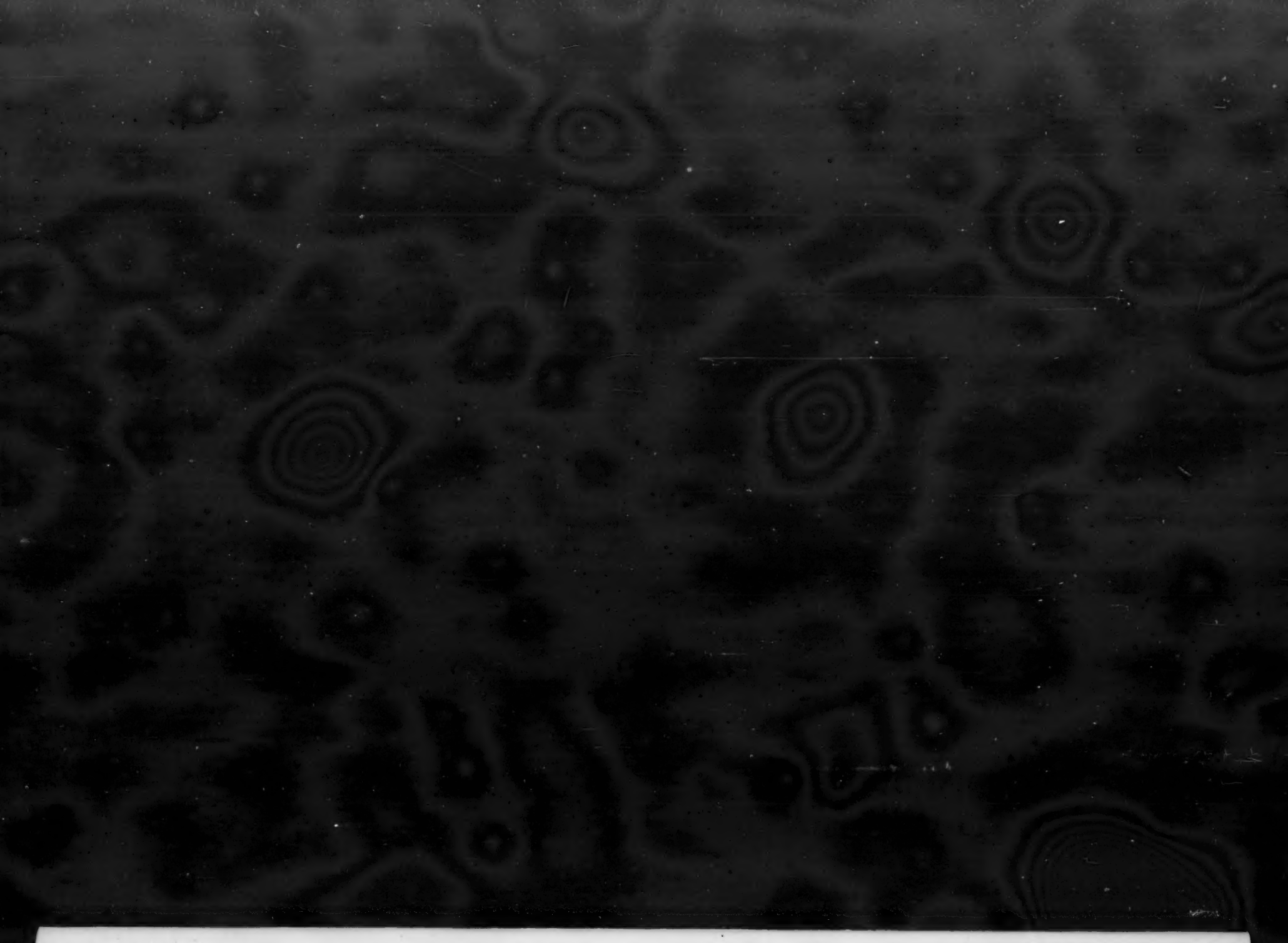

Aerial view from nearly two miles aloft over the New Jersey shore of the Hudson River, looking across Manhattan Island into the Upper Bay of New

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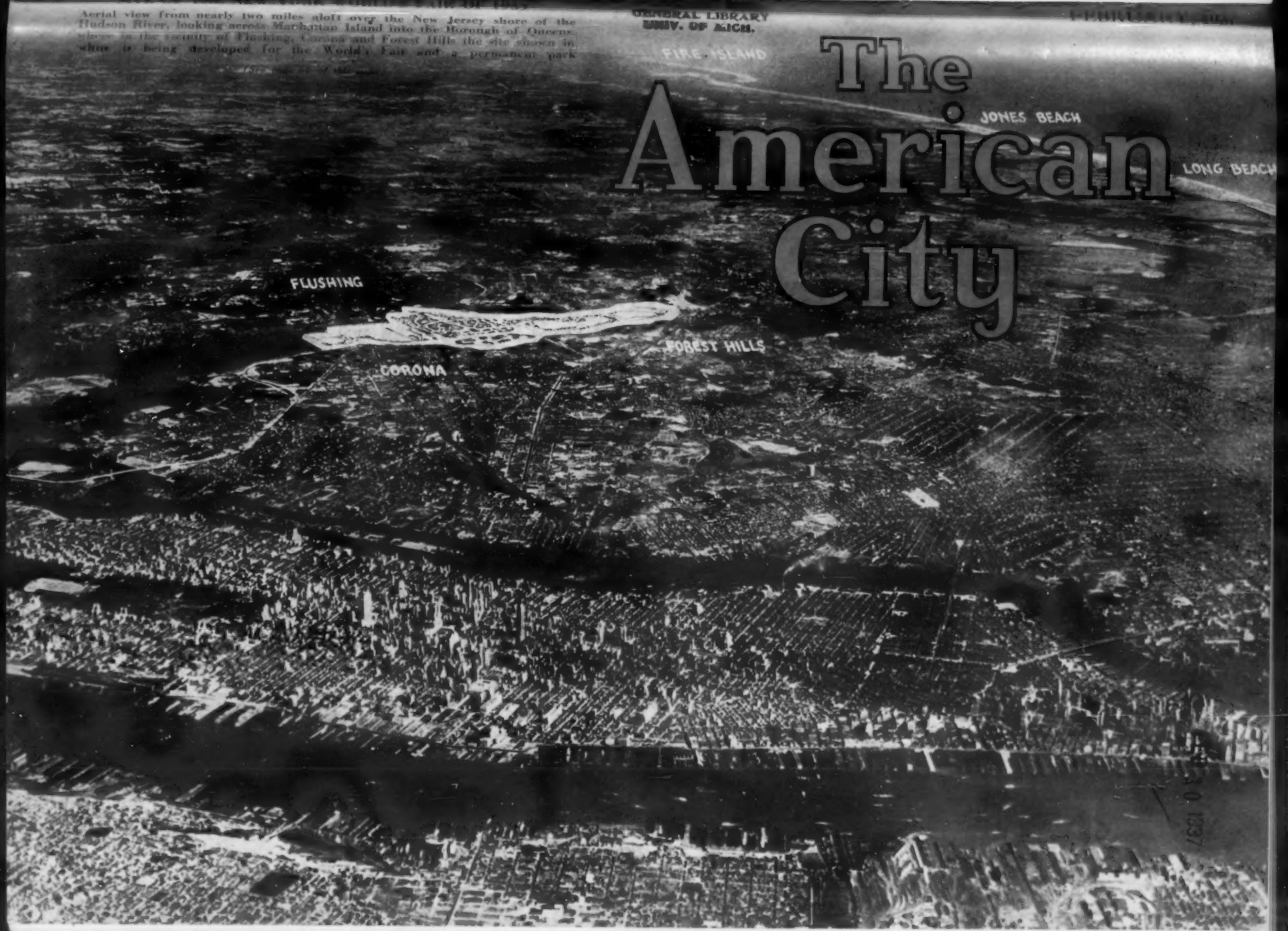

Aerial view from nearly two miles aloft over the New Jersey shore of the Hudson River, looking across Manhattan Island into the Borough of Queens, shows in the vicinity of Flushing, Corona and Forest Hills the site shown in white is being developed for the World's Fair and a permanent park